

THE
PHILOSOPHY OF MEDICINE:

OR,

MEDICAL EXTRACTS

ON THE

NATURE OF HEALTH AND DISEASE,

INCLUDING THE

LAWS OF THE ANIMAL ŒCONOMY,

AND THE

DOCTRINES OF PNEUMATIC MEDICINE.

BY

A FRIEND TO IMPROVEMENTS.

There are three things which almost every person gives himself credit for understanding, whether he has taken any pains to make himself master of them or not—
scilicet 1. *The art of mending a dull fire*, 2. *Politics*; and, 3. *PHYSIC*

DR. BEDDOES.

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OF

VOLUME IV.

LAW THIRD.

A TOO GREAT EXCITEMENT OF THE NERVES, OR MOVING FIBRES, EXHAUSTS THE POWERS OF THE MIND, AND ENFEEBLES THE BODY.

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LAW III.

**A too great Excitement of the Nerves,
or moving Fibres, exhausts the
Powers of the Mind, and
enfeebles the Body.**

INTRODUCTION.

SECTION I.

OF EXHAUSTION.

THE state of *exhaustion* in the nerves, as in the irritable fibre, may be either.

1. TEMPORARY, or
2. IRREPARABLE.

In the state of *temporary exhaustion*, the mind is tired, and, like the body, recovers its due tone only by rest:

But in the state of *permanent exhaustion* this recovery is slow, and, generally, irreparable.

I. TEMPORARY EXHAUSTION
OF
THE NERVES.

SECT. II.

OF TEMPORARY EXHAUSTION.

Just as the morning steals upon the night,
 Melting the darkness, so their rising senses
 Begin to chase away the fumes that mantle
 Their clearer reason. Their understanding
 Begins to swell, and the approaching tide
 Will *shortly* fill the reasonable shore
 That now lies foul and muddy.

SHAKESPEARE.

To shew the diminution of *sensibility* from increased action, if one hand be put into very warm water, and then immersed with the other into subtepid water, to the former this water will appear extremely cold, while to the other hand it will impart an agreeable warmth. For the same reason we feel a chillness on coming into an atmosphere of a temperate warmth, after having been for some time in a very close apartment. Hence we are unable clearly to distinguish objects, immediately after we have seen a bright flash of lightning pervade the gloom of night. Thus MILTON, in describing the light and glory which flows from the divine presence and the majesty of God, says,

Dark with excessive light thy skirts appear.

Here is an idea not only practical in an high degree, but strictly and philosophically just. *Extreme light;*

light, by overcoming the organs of sight, obliterate all objects, so as in its effects exactly to resemble darkness. Thus, after having looked at the setting sun for a short time, if we turn our eyes to a less splendid part of the heaven, a dark spot will be perceived exactly resembling the shape of that bright luminary.

That these phenomena depend upon the *exhaustion* of *sensibility*, may be proved also by looking stedfastly on an area of scarlet silk of about an inch diameter spread on white paper, the scarlet colour will gradually become fainter, until it entirely vanishes, if the eye be kept uniformly upon it. Or if you look at a surface of light blue, and then place upon it a smaller surface painted of the ultramarine blue, the appearance of the light blue will be nearly obliterated. It is on this account that painters put in their first shades darker than a by-stander ignorant of this law would imagine right, and produce the greatest effect by the contrast of shades.

SECT. III.

OF ASPHYXIA FROM MENTAL AGITATION.

—Ubi vehementi magis est percussa metu mens,
 Concentire animam totam per membra videmus;
 Sudores itaque, et pallorem existere toto
 Corpore, et infringi linguam, vocemque aboriri,
 Caligare oculos, sonere aures, succidere artus.

LUCRETIVS.

IN excessive fright the eyes for a moment flash fire; the hair becomes electric and stands erect; the heart palpitates; the body is thrown into the attitude for escaping; but the danger being inevitable, cold sweats succeed; the hair of the body droops; the eyes become dim, and as it were semipellucid; the surface flaccid, cold, and pale; and the person sinks down inanimate.

Admitting the analogy, if not perfect identity betwixt the *nervous fluid* and that of *electricity**,
 we

* Sir ISAAC NEWTON, at the end of his *Principia*, has the following Query: "Is not all *sensation* performed, and the
 " *limbs of animals* moved, in a voluntary manner by the power
 " of a certain *subtle fluid*, resembling ELECTRICITY, which
 " we will call *æther*, i. e. by the vibratory motion of *this spirit*
 " —propagated along the nerves from the *external organs* of
 " *the senses* to the BRAIN; and FROM the BRAIN into the
 " *muscles*." "If a man in the dark," continues Sir ISAAC
 NEWTON, "presses against the corner of his eye, or receives
 " a blow, as he turns away his eye hastily from the injury, he
 " will perceive a circle of colours, or a *flash of light*, and this
 " appearance will continue about a second of time." Vide
 his OPTICS, Qu. 16. It was before observed, that if a plate
 of

we can account for one part of the appearances. Upon what other principle can we explain the power that can make

The knotty and combined locks stand an end,
Like quills upon the fretful porcupine?

Whence otherwise shall we account for those fiery scintillations of the eye first excited upon a sudden alarm? And whence that succeeding dimness, when the hairs of the body subside, and the limbs sink down powerless?

The phænomena of blood-letting will serve us to explain the other symptoms. I bled, says Mr. HUNTER, a lady whose blood at first was of a *dark colour*; but she fainted, and while she continued in the fit, the colour of the blood that came from the vein was of a *bright scarlet*. Mr. HEWSON observes also the power of the mind, as he terms it, of altering the character of the blood, and of three small cups, the first shall sometimes

zinc be placed between the gums and upper lip, and a plate of gold be brought into contact with the zinc, a *similar flash of fire* will be perceived: and if this experiment be tried on the tongue, an acid taste will be experienced similar to that of the *electric aura*. Vide Vol. I.; also Vol. III. the Section on the Brain.

When we are in the dark, says the eloquent BURKE, in his Essay on the Sublime and Beautiful, there is a continual endeavour of the pupil to receive light. Hence arise those *flashes and luminous appearances*, which often seem in these circumstances to play before it, and which can be nothing but the effect produced by the nervous fibres in their efforts to obtain its proper object of vision.

contain

contain *florid* blood, the second *venal*, and the third *florid* again; but in animals that are bled to death, I always, says this accurate experimentalist, found that the *venal blood* became *brighter* in proportion as the animals became faint and it *coagulated* the more *. Might not the violent palpitation of the heart; the hurry of the circulation; the retrograde motion of the absorbents; the coldness and paleness of the skin; the inability for muscular action, &c. depend upon the minute arteries not giving out their *oxygen*, as is manifest from these experiments? If so, it will further confirm the doctrines contained in Vol. I. of this work †.

Hence it will be proper to allow the swooning patient to remain in the state of *quiescence*: for during *this torpor* the IRRITABLE PRINCIPLE will accumulate in the fibres, and by degrees the just *balance* will be restored betwixt the *excitability* and the *natural stimuli*. To accelerate recovery, the person ought however to be exposed to

That VITAL BREEZE, which NATURE pours
to save

The breathless victim from the untimely grave;

* From possessing more OXYGEN, *i. e.* the principle of life.
—Dr. BEDDOES.

† The *pulsation* of the heart and arteries; the *powers* of the stomach; the *colour* and *warmth* of the surface; the ability for *muscular action*; was shewn before to depend on OXYGEN.
Vide Vol. I.

and

and the forehead should be rubbed with *vinegar* * which ought also to be sprinkled all around the swooning patient; or the real *oxygen air* might be placed against the mouth and nostrils, while water is poured into the bottle; and the hands and face should be rubbed with *cold water*.

* Fermented liquors, when exposed to *heat* and *air*, absorb VITAL AIR, and become in consequence *vinegar*. Being sprinkled in fine sprays, it is rendered *acrid*, and parts with its OXYGEN when it comes into contact with the *animal fibre*.

SECT. III.

TEMPORARY EXHAUSTION FROM FATIGUE
OF MIND.

THAT violent exertions of the mind fatigue the frame as much, if not more, than bodily labour, every day furnishes abundant proof.

During the late war with AMERICA, when it was proposed to continue on hostilities, Lord CHATHAM, at the close of a very long and animating speech, said—My Lords, you cannot conquer AMERICA. No man thinks more highly of my country than I do. I love and honour the English troops. I know their virtues and their valour. I know they can achieve any thing, except impossibilities. As to the conquest of AMERICA, I repeat, my lords, it is impossible. You may swell every expence and every effort still more extravagantly; pile and accumulate every mercenary assistance you can beg or borrow; traffic and barter with every little pitiful German prince that sells his subjects to the shambles of a foreign power: your efforts are for ever vain and impotent; doubly so from this mercenary aid on which you rely: for it irritates to an incurable resentment the minds of your enemies. To overrun them with the mercenary sons of rapine and plunder, devoting them and their possessions to the rapacity of hireling cruelty! If I were an *American*
as

as I am an *Englishman*, while a foreign troop was landed in my country, I would never lay down my arms: NEVER—NEVER—NEVER.

Your army is infected with the contagion of these illiberal allies: the spirit of plunder and of rapine is gone forth among them. I know it, I am informed from the most experienced officers that our discipline is deeply wounded. Whilst this is notoriously *our* sinking situation, AMERICA grows and flourishes: whilst *our* strength is lowered, *their's* rises and improves.

But, my lords, in addition to these disgraces and mischiefs of our army, the ministers have dared to authorize and associate to our arms the tomahawk and scalping knife of the savage! have called into civilized alliance the wild and inhuman savage of the wood! have delegated to the merciless Indian the defence of disputed rights, and to wage the horrors of his barbarous war against even brethren!

My lords, this enormity cries aloud for redress, and unless thoroughly done away, it will be a stain on the national character; it is a violation of the constitution; I believe it is against the law.

It is not amongst the least of our national misfortunes, that our army is infected with the mercenary spirit of robbery and rapine, for, familiarized to the horrid scenes of cruelty, it can no longer boast of the noble and generous principles, which dignify a soldier, no longer sympathize with

“ the

“ *the dignity of the royal banner,*” nor feel “ *the pride, pomp, circumstance of glorious war,*” that make ambition virtue.—What makes ambition virtue?—A sense of honour:—but is a sense of honour consistent with a spirit of plunder, and the practice of murder? Can it flow from mercenary motives? Or can it prompt to cruel deeds?

My lords, the time demands the language of truth: we must not now lay the flattering unction of servile compliment or blind adulation. In a just or necessary war, to maintain the rights or the honour of my country, I would strip the shirt from my back to support it: but in such a war as *this*, unjust in all its principles, impracticable in its means, and ruinous in its consequences, I would not contribute a single effort, or a single shilling. In this complicated crisis of danger, weakness at home, and calamity abroad, terrified and insulted by the neighbouring powers; unable to act in AMERICA, or acting only to be destroyed, where is the man with the forehead to say our affairs are in a hopeful situation! who has the forehead to promise or to hope success from such a situation, or from perseverance in those measures that have driven us to it?

But if in an obstinate and infatuated perseverance in folly we meanly echo back the words this ‘av offered to us, we shall madly rush into multiplied miseries, and confusion worse confounded. Is it possible? Can it be believed, that ministers are
yet

yet blind to their impending destruction? I did hope, that instead of this false and empty vanity; this overweening pride engendering high conceits, and “presumptuous imaginations,” that ministers would have humbled themselves in their errors; would have confessed and retracted them; and by an active, though late repentance, have endeavoured to redeem them.

But, my lords, since they had neither sagacity to foresee, nor justice nor humanity to shun, these oppressive calamities: since not even severe experience can make them feel, nor the imminent ruin of their country awaken them from their stupefaction; the guardian care of parliament *must* interpose.

The AMERICANS contending for their rights against our arbitrary exactions, I love and admire. It is the struggle of free and virtuous patriots. But contending for a *total disconnection* from ENGLAND, as an Englishman I cannot wish them success, for on this connection depends the mutual happiness and prosperity of both ENGLAND and AMERICA. They derived encouragement, assistance, and protection from us, and we reaped from her the most important advantages. She was indeed the foundation of our wealth, the nerve of our strength, the nursery and basis of our naval power. It is our duty, my lords, most anxiously to endeavour the recovery of these inestimable, these most beneficial advantages: and in
this

this perilous crisis, perhaps the present moment may be the only one in which we can hope for success. For the natural disposition of AMERICA as yet leans towards ENGLAND, towards the old habit of connection and mutual interest that united both countries. This was the established sentiment of all the continent: and still, my lords, in the great and principal part, the sound part of AMERICA, the middle and southern colonies, this wise and affectionate disposition prevails: and there is a very important and considerable part of AMERICA yet sound. Some parts may be blind to their true interests; but if we express a just, a wise, and a benevolent disposition to participate with them those immutable rights of nature and constitutional liberties, to which they are equally entitled with ourselves: by a conduct so just and humane, we shall confirm the most favourable, and conciliate the most adverse. I say, my lords, the rights and liberties to which they are equally entitled with ourselves but *no more*. I would participate to them every enjoyment and every freedom which the colonizing subjects of a free state can possess, or wish to possess: and I do not see why they should not enjoy every fundamental right in their property and every original substantial liberty that Devonshire or Surry, or the county I live in, or any county in ENGLAND can claim. I shall, therefore

fore, my lords, propose to you an amendment to the address to his Majesty; “*to recommend (instead of prosecuting further this calamitous war) an immediate cessation of hostilities; and the commencement of a treaty to restore peace and liberty to AMERICA, strength and happiness to ENGLAND; security and permanent prosperity to both countries.*”

This, my lords, is yet in our power, and let not the wisdom and justice of your lordships neglect the happy and perhaps the only opportunity. By the establishment of irrevocable laws, founded on mutual rights, and ascertained by a treaty, these glorious enjoyments may be firmly perpetuated. The sound parts of AMERICA of which I have spoken, must be sensible of these great truths, and of their real interests: AMERICA is not in that state of desperate and contemptible rebellion which this country has been deluded to believe. It is not a wild and lawless banditti, who having nothing to lose might hope to snatch something from public convulsions; many of their leaders and principal men have a great stake in this contest; and let me again repeat to your lordships, that the strong bias of AMERICA, at least of the wiser and sounder part of it, naturally inclines to this happy and constitutional re-connection with you.

LORD CHATHAM was supported in his proposed amendment by LORD ABINGDON, LORD SHEL-

BURNE, the Duke of GRAFTON, Lord CAMDEN, the Duke of RICHMOND, Lord EFFINGHAM, and the Bishop of PETERBOROUGH.

Lord ABINGDON was short and spirited. Lord SHELburne, as usual, discussed the subject in a very ample and comprehensive manner. The Duke of GRAFTON spoke long, and with much earnestness, preserving at the same time, what generally characterizes this nobleman's speaking, a decent and chastised stile of dignity. Lord CAMDEN was argumentative, fluent, sincere, and animated. The Duke of RICHMOND was a powerful assistant to the noble mover of the amendment. And the Bishop of PETERBOROUGH pronounced a short and pithy opinion on the question; clothed in language uniting qualities rarely found together, being both nervous and elegant.

On the other side there were many able speakers who supported the continuance and principle of the war. With respect to the employment of *Indians*, Lord SUFFOLK said, it was a measure necessary in fact, and allowable in principle: for it was perfectly justifiable to use every means against our enemies, that GOD and NATURE had put into our hands.

Lord CHATHAM *rose*.

I am astonished—shocked—to hear such principles confessed:—to hear them avowed in this house, or in this country:—principles equally un-

constitutional, inhuman, and unchristian.—My lords, I did not intend to have encroached again on your attention:—but I cannot repress my indignation:—I feel myself impelled by every duty.—My lords, we are called upon as members of this house, as Christian men, to protest against such notions standing near the throne, polluting the ear of majesty.—That GOD and NATURE put into our hands!!—I know not what ideas that lord may entertain of GOD and NATURE: but I know that such abominable principles are equally abhorrent to RELIGION and HUMANITY.—What—to attribute the sacred sanction of GOD and NATURE to the massacres of the Indian scalping knife!—to the cannibal savage torturing, murdering, roasting, and eating,—literally, my lords, eating the mangled victims of his barbarous battles!—Such horrible notions shock every precept of religion, divine or natural, and every generous feeling of humanity: and, my lords, they shock every sentiment of honour:—they shock me, as a lover of honourable war, and a detester of murderous barbarity.—These abominable principles, and this more abominable and shameful avowal of them, demand the most decisive indignation.—I call upon that right reverend bench, those holy ministers of the gospel and pious pastors of our church:—I conjure them to join in the holy work, and vindicate the religion of their God!—I appeal to the wisdom of this learned bench to defend
and

and support the justice of their country:—I call upon the bishops to interpose the unfulfilled sanctity of their lawn:—upon the reverend judges, to interpose the purity of their ermine, to save us from this pollution.—I call upon the honour of your lordships to reverence the dignity of your ancestors, and to maintain your own:—I call upon the spirit and humanity of my country to vindicate the national character:—I invoke the genius of the constitution, from the tapestry that adorns these walls, the immortal ancestor * of this noble lord, who frowns with indignation at the disgraces of his country.—In vain he led your victorious fleets against the boasted Armadas of Spain; in vain he defended and established the honour, the liberties, the religion, the Protestant religion of this country against the arbitrary cruelties of Popery and the Inquisition; if these more than Popish cruelties and inquisitorial practices are let loose among us.—To turn forth into our settlements, among our ancient connections, friends, and relations, the merciless cannibal thirsting for the blood of man, woman, and child! —To send forth the infidel savage—against whom?—Against your Protestant brethren!—To lay waste their country; to desolate their dwellings, and extirpate their race and name, with their hell-hounds of savage war!—Hell-hounds I

* Lord EFFINGHAM HOWARD, Queen ELIZABETH'S Lord High Admiral.

say of savage war. Spain armed herself with blood-hounds to extirpate the wretched nations of America:—and we improve on the inhuman example even of Spanish cruelty. We turn loose these savage hell-hounds against our brethren and countrymen in America, of the same language, laws, liberties, and religion:—endeared to us by every tie that should sanctify humanity.

My lords, this awful subject, so important to our honour, our constitution, and our religion, demands the most solemn and effectual enquiry: and I again call upon your lordships, and the united powers of the state, to examine it thoroughly and decisively, and to stamp upon it an indelible stigma of public abhorrence: and I again implore those holy prelates of our religion to do away these iniquities from among us. Let them purify this house, and this country, from so great a sin.

My lords, I am old, and weak; and *at present* UNABLE * *to say more*:—but my feelings and my indignation were too strong to have said less. I could not have slept this night in my bed, nor reposed my head upon my pillow, without giving this vent to my eternal abhorrence of such preposterous and enormous principles.

* This arose from exhaustion, recoverable.

II. PERMANENT EXHAUSTION
OF
THE NERVES.

SECT. IV.

OF PERMANENT EXHAUSTION.

THE DEATH OF LORD CHATHAM.

Curæ leves loquunter, ingentes *ſupent*.

TACITUS.

NOTWITHSTANDING a negative had been put upon every proposition and motion made by Lord CHATHAM concerning *America*, yet he resolved to persevere in the same line of conduct. To his *zeal* in this cause he sacrificed his life. He had not strength of frame sufficient to bear the exertions he made. He was now advanced in the seventieth year of his age, and suffered the severest attacks of gout; but although debilitated by infirmity, and enervated by anguish of body and mind, still he refused to yield to the calls of his disorder, or to mitigate his pains by the indulgence of a bed—while his country was bleeding, he felt for *her* and not for himself. *Her* honour and splendour had been his glory and his pride—*her* debasement and adversity were now the only subjects of his concern and anxiety.

On the 7th day of April, 1778, the Duke of RICHMOND having moved to present an address to the king on the subject of the state of the nation, in which the necessity of admitting the *full* INDEPENDENCE of *America* was hinted, Lord
CHATHAM,

CHATHAM, for the last time, rose to speak in the House of Lords.

My lords, he said, I rejoice that the grave has not closed upon me; that I am still alive to lift up my voice against the dismemberment of this ancient and most noble monarchy! Pressed down as I am by the hand of infirmity, I am little able to assist my country in this most perilous conjuncture; but, my lords, while I have sense and memory, I will never consent to deprive the royal offspring of the House of BRUNSWICK of their fairest inheritance. Where is the man that will dare to advise such a measure? My lords, his Majesty succeeded to an empire as great in extent as its reputation was unfulfilled. Shall we tarnish the lustre of this nation by an ignominious surrender of its *rights and fairest possessions*? Shall this great kingdom truckle to the House of BOURBON? Shall a people, that seventeen years ago was the terror of the world, now stoop so low as to tell its ancient inveterate enemy, "Take all we have, only allow us peace?" Is it possible!—I wage war with no man, or set of men.—I wish for none of their employments;—nor would I co-operate with men (alluding to the Duke of Richmond) who instead of acting on a firm decisive line of conduct, halt between two opinions, where there is no middle path. In God's name, if it is absolutely necessary to declare either peace or war, and the former cannot be preserved with honour, why

why is not the latter adopted without hesitation? I am not, I confess, well informed of the resources of this kingdom; but, my lords, any state is better than despair, and I trust it has still sufficient to maintain its *just rights*. Let us at least make another effort; and if we must fall, let us fall like men.

The Duke of RICHMOND having spoken rather harshly to some parts of Lord CHATHAM's speech, his lordship, greatly moved, attempted to rise in reply; but after two or three efforts to stand, he *fainted and fell down on his seat* *. The Duke of CUMBERLAND, Lord TEMPLE, Lord STAMFORD, and other lords, caught him in their arms. The house was immediately cleared, and the windows thrown open. This venerable patriot was carried to an adjoining room, and the house immediately adjourned.—This unhappy event proved the melancholy prelude to his death. He languished at *Hayes* until the eleventh day of May, 1778, when he died; to the sincere regret of every person who has a just sense of human dignity and virtue.

* There is a fine picture of this Event by Copley.

SECT. V.

FREQUENT END OF GREAT LITERARY TALENTS.

MEN of letters, says Baron Van SWIETEN, who lead a studious life, are on this account much exposed to apoplexy. At first they become languid; they delight in ease and indolence; their understanding grows dull; their memory decays and fails them; they then grow heavy, sleepy, and stupid, and often remain long in this wretched situation before they die. It has given me, he continues, much concern to see learned men of the first class, who had been very servicable to literature, live more than a twelvemonth after the loss of their faculties, forget every thing; and at last die on a sudden.

Sure 'tis a curse which angry fates impose
 To mortify man's arrogance, that those
 Who 're fashion'd of some better sort of clay,
 Much sooner than the common herd decay.
 O, galling circumstance to human pride!
 Abasing thought, but not to be denied!
 With curious art the brain, too finely wrought,
 Preys on herself, and is destroy'd by thought.
*Constant attention wears the active mind,
 Blots out her pow'rs, and leaves a blank behind.*

CHURCHILL.

It

It was thus with Dean SWIFT, who was seized in 1736 with violent giddiness, which in a few years gradually deprived him of his reason, and he sunk at last into a speechless idiot; and in the latter end of October 1745, without even giving an alarm to his attendance, he expired. A man in possession of his reason would have wished for such a kind dissolution, but the Dean was wholly insensible; he had not even the power or expression of a child, appearing, for some years before his death, the reverse of that fine description of man given us by MILTON:

A being, who not prone
 And brute as other creatures, but endu'd
 With sanctity of reason, might erect
 His stature, and upright with front serene
 Govern the rest, self-knowing, and from thence
 Magnanimous to correspond with heaven,
 But grateful to acknowledge whence his good
 Descends, thither with heart, and voice, and eyes,
 Directed in devotion, to adore
 And worship GOD supreme, who made him *chief*
Of all his works.

SECT. VI.

STORY OF LOUISA, MAID OF THE HAY-STACK.

HISTORY affords many very striking instances of the effect of mental agitation in disturbing the powers of the understanding.

A German lady of great beauty and accomplishments having married a Hessian officer, who was ordered to *America*, and not being able to acquire any tidings of him in her own country, came over to *England*. Here, she could only learn the destiny of her husband from those ships which had either transported troops to the continent, or were bringing back the wounded. Day after day she wandered on the beach at *Portsmouth*, and hour after hour she wearied her eyes bedewed with tears in the vain expectation of seeing him. She was observed, at the same spot, ere it was light, and watched each motion of the waves until the setting sun. Then her haunted imagination presented him mangled with wounds, and the smallest gust of wind seemed to threaten her with an eternal separation. Did a ship enter into port, her eager steps led her to the spot, and many an enquiry was repaid with an insolent rebuff. After eight months spent in this anxious manner, a ship arrived, bringing her the melancholy pleasure, "that some Hessian officers, who were wounded, were on their passage." Her impatience



impatience increased daily. A vessel at length arrived; reported to have Hessian troops on board. She kept at some distance for fear of giving too great a shock to her husband's feelings, should he be among them. He was landed with others. She fainted, and he was conveyed, she knew not where. Having recovered, and going to the different inns, she found at last her husband. The master of the inn informed her, "he was very "bad," and she begged that her being in England might be gradually broken to him. When she entered the room, he burst into a flood of tears. A lady was supporting him in her arms. What words, or painter, could represent the tragedy that followed! He had married in *America*, and this person was also his wife. He entreated "pardon," was past reproach, for in a few minutes after he sunk into the arms of death. The lady, whose melancholy history we are recording, rushed from the room, and leaving her clothes and money at her lodging, she wandered she knew not whither, vowing "that she would never enter "house more, or trust to man." She stopped at last near *Bristol*, and begged the refreshment of a little milk. There was something so attractive in her whole appearance as soon produced her whatever she requested. She was young, and extremely beautiful:—her manners graceful and elegant, and her countenance interesting to the last degree.—She was alone—a stranger—and in extreme

extreme distress ;—she asked only for a little milk—but uttered no complaint, and used no art to excite compassion. Her dress and accent bore visible marks that she was a foreigner of superior birth. All the day she was seen wandering in search of a place to lay her wretched head ; she scooped towards night a lodging for herself in an old hay-stack. Multitudes soon flocked around her in this new habitation, attracted by the novelty of the circumstance, her singular beauty, but above all by the suddenness of her arrival. French and Italian were spoken to her, but she appeared not to understand these languages ; however when she was accosted in *German*, she evidently appeared confused ;—the emotion was too great to be suppressed, she uttered some faint exclamation in our tongue, and then, as if hurried into an imprudence, she attempted to be also without knowledge of this language. Various conjectures were instantly formed, but what seemed passing strange was her acceptance of no food, except bread or milk, and that only from the hands of females ! On the men she looked with anger and disdain, but sweetly smiled as she accepted any present from the other sex. The neighbouring ladies remonstrated with her on the danger of so exposed a situation, but in vain, for neither prayers nor menaces could induce her to sleep in a house.

As she discovered evident marks of insanity, she was at length confined in a mad-house, under
the

the care of Dr. RENAÜDET, physician at the *Hot Wells*. On the first opportunity she escaped, and repaired to her beloved hay-stack. Her rapture was inexpressible on finding herself at liberty, and once more safe beneath this miserable refuge.

Beneath a hay-stack LOUISA'S dwelling rose,
 Here the fair maniac bore four winters' snows.
 Here long she shiver'd, stiffening in the blast,
 And lightnings round her head their horrors cast.
 Dishevell'd, lo! her beauteous tresses fly,
 And the wild glance now fills the staring eye:
 The balls fierce glaring in their orbits move;
 Bright spheres, where beam'd the sparkling fires
 of love,
 Ill-starr'd LOUISA!

It was nearly four years that this forlorn creature devoted herself to this desolate life, since she knew the comfort of a bed, or the protection of a roof. Hardship, sickness, intense cold, and extreme misery, have gradually impaired her beauty, but she still is a most interesting figure; and there remains uncommon sweetness and delicacy in her air and manner; and her answers are always pertinent enough, except when she suspects the question is meant either to affront or ensnare her, when she seems sullen or angry. Some Quaker ladies at this time interposed, and LOUISA, as she was called, was conveyed to *Guy's Hospital*, where

where she at present is, and still maintains her indignation against the men *.

The person with whom she lodged, upon her death-bed, divulged the secret of the flight of this stranger from *Portsmouth*, which corresponds nearly with the time of her arrival near *Bristol*, and future enquirers have discovered, that she is “*the natural daughter of FRANCIS Emperor of Germany*.”

* When any gentleman enters the room where she is kept, she always turns her head aside, and still expresses a fuller disdain.

† Vide the Narrative of Facts respecting the Bristol Stranger, or Maid of the Hay-stack.

SECT. VII.

HISTORY OF MADEMOISELLE DE M——.

THE page of history furnishes us also with another instance equally terrible; when that system of government was established in FRANCE, during the continuance of which, to use the words of an eloquent member of the Convention, there was under every footstep a *spring-gun*, under every roof a *spy*, and in every family an *informer*, and on every bench of justice an *assassin*.

A small tree of liberty which had been planted on a solitary spot near *Bedouin*, was, during the night, torn from the ground by a wretch, who knew that this incident would furnish a pretext for pillage and devastation. At break of day the very person who was the perpetrator of this act, the *president* of one of those societies, which was the terror of all good citizens, being the combination only of the violent and worthless, founded a general alarm, and accused the guiltless inhabitants of *Bedouin* of the sacrilege committed against the hallowed symbol of freedom.

Without further inquiry a municipal commission was immediately organized by MAIGNET, which presented itself for the hope of spoil. Revolutionary troops were instantly summoned to spread through the village and territory of *Bedouin* desolation and death. Five hundred habitations
were

were delivered to the flames; the fruits of the harvest were consumed; and the mandate of MIGNET, fatal as the fabled wand of an evil magician, struck the rich and luxuriant soil with sudden sterility. The flourishing silk manufactures of *Bedouin* shared also the fate of its desolated fields. The inhabitants being unable to name the guilty persons, were all involved in one general proscription. Those who escaped the guillotine sought for shelter in the depths of caverns, after the conflagration of their habitations, on the ruins of which bills were affixed, forbidding any person to approach the spot.

Two hundred and eighty young men of *Bedouin*, who were clothed by the village, and had flown to the frontier even before the requisition in order to defend their country, in vain dispatch successive letters pleading with fond solicitude for their parents. Those gallant young soldiers will return to their native village, their brows bound with the laurels of valour. Alas! they will find their native village but one sad heap of ruins!—in vain they will call upon the tender names of father, of mother, of sister: a melancholy voice will seem to issue from the earth that covers them, and sigh, they are no more! For those victorious warriors no car of triumph is prepared; no mother's tears of transport shall hail the blessed moment of their return; no father shall clasp them to his bosom with exulting joy, proud

proud of their heroic deeds. Ah, no! their toils, their dangers, and their generous sacrifices, shall find no recompense in the sweetness of domestic affection, in the soothing bliss which, after absence, belongs to home!—Alas! their homes are levelled with the ground; they will find no spot upon which to repose their wearied limbs but the graves of their murdered parents.—

Amidst the groans of so general a calamity, no doubt many a sigh of private sorrow has never reached the ear of sympathy, and many a victim has fallen unpitied and unknown. Some of the martyrs of MAIGNET's tyranny have however found the sad recorder of the pensive tale, and the fate of Monsieur de M——'s family is not among the least affecting of those scenes which were extended over the district of *Bedouin*.

Monf. de M——, after wandering^{ly} as far as his infirmities would permit, for he was old and sick, took refuge in a lonely habitation, a few leagues distant from *Avignon*, situate in one of the wildest parts of that romantic country; in that celebrated region, for ever dear to the lovers of the elegant arts, where the immortal PETRARCH poured forth his impassioned strains. Divine poet! no more shall the unhappy lover seek for consolation in shedding delicious tears on the brink of that fountain where thou hast wept for LAURA!—no more shall he haunt with pensive enthusiasm that solitary valley, those craggy rocks, those hanging

woods, and torrent streams, where thou hast wandered with congenial feelings, and to which thy tender complaints have given everlasting renown!—those enchanting dreams, those dear illusions, have for ever vanished—that delicious country, the pride of France, the garden of Europe, the classical haunt of **PETRARCH**, no longer presents the delightful images of beauty, of poetry, of passion; the magical spell is broken, the soothing charm is dissolved; the fairy scenes have been polluted; the wizard bower profaned; the orange-groves are despoiled of their aromatic sweetness; the waters are tinged with blood; the hollow cliffs re-echo the moans of the wretched, and the shriek of despair; the guillotine has arisen amidst those consecrated shades where love alone had reared its altars! No longer with the name of **Vauchuse** is associated the idea of **PETRARCH**; that of **MAIGNET** presents itself to the shuddering imagination. For here it was that **Monf. de M——** sought for refuge, attempting to shelter himself from the rage of his ferocious persecutors.

He had soon after the anguish of hearing that his brother had perished on the scaffold.

Monf. de M—— sent to inform his sister-in-law of the place of his retreat, to which he conjured her to hasten with her only daughter, and share the little property which he had rescued from the general wreck of his fortune.

His old and faithful servant **MARIANNE**, who was the bearer of this message, returned, accompanied by his niece: her mother was no more: she had only survived a few days the death of her husband.

The interview between Mademoiselle Adelaide de M—— and her uncle produced those emotions of overwhelming sorrow that arise at the sight of objects which interest our affections after we have sustained any deep calamity; in those moments the past rushes on the mind with uncontrollable vehemence; and Mademoiselle de M——, after having long embraced her uncle with agony, at length pronounced in the accents of despair the names of father and of mother.

Monf. de M—— endeavoured to supply to his unfortunate niece the place of the parents she had lost, and forgot his own evils in his attempt to sooth the affliction of this interesting mourner, who at nineteen years of age, in all the bloom of beauty, was the prey of deep and settled melancholy.

She had too much sensibility not to feel his tender cares, and often restrained her tears in his presence because they gave him pain.

When those tears could no longer be suppressed, she wandered out alone, and seating herself on some fragments of rock, soothed by the murmurs of the hollow winds and moaning waters, indulged her grief without controul.

In one of those lonely rambles, sacred to her sorrows, she was awakened from melancholy musing by the sudden appearance of her cousin, the son of Mons. de M——, who, after having repeatedly exposed his life during a long and perilous campaign in the service of his country, returned to find his uncle sacrificed, his aunt dead, his father an exile, and his home burnt. Such were the rewards which the gallant defenders of liberty received from the hands of *tyrants*.

A few months before he had beheld his lovely cousin in all the pride of youthful beauty; her cheek flushed with the gay suffusion of health, and her eye sparkling with pleasure. That cheek was now covered with fixed paleness, and that eye was dimmed with tears; but Mademoiselle de M—— had never appeared to him so interesting as in this moment.

Two young persons, placed together in such peculiar circumstances, must have had hearts insensible indeed, had they conceived no attachment for each other. The scene in which they were placed was peculiarly calculated to cherish the illusions of passion; not merely from displaying those simple and romantic beauties the contemplation of which softens while it elevates the affections—it had also that local charm which endears to minds of taste and sentiment spots which have been celebrated by the powers of genius. PETRARCH, the tender, the immortal PETRARCH, had trod those
very

very vallies, had climbed those very rocks, had wandered in those very woods—and the two young persons, both understanding Italian, when they read together the melodious strains of that divine poet, found themselves transported into happier times, and forgot for awhile that all beyond the narrow cleft was misery and disorder.

From those dreams, those delightful illusions, they were awakened by a letter, privately conveyed to him, conjuring him, if he would shun being classed among the proscribed, to repair immediately to the army.

Young de M—— considered the defence of his country against invaders, as a sacred duty which he was bound to fulfil. He also thought it prudent to depart. He bid adieu to his father and ADELAIDE with tears wrung from a bleeding heart, and tore himself away with an effort which it required the exertion of all his fortitude to sustain.

After having passed the cleft, which enclosed the valley, he again turned back to gaze once more on the spot which contained all his treasure.

ADELAIDE, after his departure, had no consolation but in the sad yet dear indulgence of tender recollections; in shedding tears over the paths they had trod, over the books they had read together.

Alas, this unfortunate young lady had far other pangs to suffer than the tender repinings of absence from a beloved object!

Two proscribed victims of the tyranny of MAIGNET, who were friends to Monf. de M——, and knew of the place of his retreat, sought for an asylum in his dwelling.

Monf. de M—— received his fugitive friends with affectionate kindness. But a few days after their arrival their retreat was discovered by the emissaries of MAIGNET; the narrow part of the valley was guarded by soldiers; the house was encompassed by a military force; and Monf. de M—— was summoned to depart with the conspirators whom he had dared to harbour, in order to appear with them before the popular commission at Orange.

This last stroke his unhappy niece had no power to sustain. All the wounds of her soul were suddenly and rudely torn open; and altogether overwhelmed by this unexpected, this terrible calamity, which filled up the measure of her afflictions, her reason entirely forsook her.

With frantic agony she knelt at the feet of him who commanded the troop; she implored, she wept, she shrieked; then started up and hung upon her uncle's neck, pressing him wildly in her arms.

Some of the soldiers brutishly proposed conducting her also to the tribunal; but the leader of the band, whether touched by her distress, or fearful that her despair would be troublesome on the way, persuaded them to leave her behind.

She

She was dragged from her uncle, and locked in a chamber, from whence her shrieks were heard by the unfortunate old man till he had passed the narrow cleft of the valley, which he was destined to behold no more.

His sufferings were keen, but they were not of long duration. The day of his arrival at Orange, he was conducted before the popular commission, together with his friends, and from thence immediately led to execution.

In the meantime Mademoiselle de M——, released by MARIANNE from the apartment where she had been confined by the merciless guards, wandered from morning till evening amidst the wildest recesses of the valley, and along the most rugged paths she could find.

She was constantly followed in her ramblings by her faithful servant, who never lost sight of her a single moment, and who retains in her memory many a mournful complaint of her disordered mind, many a wild expression of despair.

She often retired to a small nook near the torrent, where her uncle had placed a seat, and where he usually passed some hours of the day.

Sometimes she seated herself on the bench; then starting up, and throwing herself on her knees before the spot where her uncle used to sit, bathed it with floods of tears. "Dear old man," she would cry, "your aged head! Poor CHARLES!" —It is well he's gone.—I see the guillotine
" behind

“ behind those trees!—now they drag up the
 “ weak old man!—they tie him to the plank!—
 “ oh, heavens!”

The acute affliction with which young De. M—— heard of the murder of his father, was still aggravated by the tidings he received from MARIANNE of the situation of his beloved ADELAIDE. Her image was for ever present to his mind; and, unable to support the bitterness of those pangs which her idea excited, he again found means to obtain leave of absence for a few weeks, and hastened to the valley.

He found the habitation deserted—all was dark and silent: he flew through the apartments calling upon the name of ADELAIDE, but no voice answered his call.

He left the house, and walked with eager steps along the valley. As he passed a cavern of the rocks, he heard the moans of ADELAIDE.—He rushed into the cavern. She was seated upon its flinty floor, and MARIANNE was sitting near.—ADELAIDE cast up her eyes as he entered, and looked at him earnestly—he knelt by her side, and pressed her hand to his bosom—“ If you are
 “ CHARLES,” says she, “ you are come too late
 “ —it is all over!—Poor old man!” Then hastily rising from the ground, and clasping her hands together, she cried, “ Don’t you see his blood on
 “ my clothes?—I begged very hard for him—I
 “ told them I had no father or mother, but him—

“ If

“ If you are really CHARLES, fly, fly !—they are
 “ on the way—I see them on the rock !—there,
 “ there !”

Such were the ravings of the disordered imagination of this unfortunate young lady, and which were sometimes interrupted by long intervals of silence, and sometimes by an agony of tears. Her lover watched over her with the most tender and unwearied assiduity ; but his cares were ineffectual. The life of ADELAIDE was near its close. The convulsive pangs of her mind had reduced her frame to a state of incurable weakness and decay.

A short time before she expired, she recovered her reason, and employed her last remains of strength in the attempt to console her wretched lover. She spoke to him of “ a happier world, “ where they should meet again, and where “ tyrants would oppress no more.”—She grasped his hand—she fixed her eyes on his—and died.

Young De M—— passed the night at the grave of ADELAIDE. MARIANNE followed him thither, and humbly entreated him to return to the house. He pointed to the new-laid earth, and waved his hand, as if he wished her to depart, and leave his meditations uninterrupted.

The next morning, at break of day, he entered the house, and called for MARIANNE. He thanked her for her care of ADELAIDE, and presented her with a purse of money ; while he was speaking,

ing.

ing, his emotion choaked his voice, and for the first time his oppressed heart found the relief of tears.

When he had recovered himself, he bade MARIANNE farewell, and hastened out of the house, muttering something in a low tone. He told MARIANNE, that he was going to join his regiment;—but he has never since been heard of.

SECT. VIII.

EDWIN AND EMMA.

FAR in the windings of a vale,
 Fast by a sheltering wood,
 The safe retreat of health and peace,
 A humble cottage stood.

There beauteous EMMA flourish'd fair
 Beneath a mother's eye,
 Whose only wish on earth was now
 To see her blest, and die.

The softest blush that nature spreads,
 Gave colour to her cheek ;
 Such orient colour smiles through heav'n
 When May's sweet mornings break.

Nor let the pride of great ones scorn
 The charmer of the plains ;
 That sun which bids their diamond blaze,
 To deck our lily deigns.

Long had she fir'd each youth with love,
 Each maiden with despair ;
 And though by all a wonder own'd,
 Yet knew not she was fair.

'Till EDWIN came, the pride of swains,
 A soul that knew no art,
 And from whose eyes serenely mild,
 Shone forth the feeling heart.

A mutual flame was quickly caught,
 Was quickly too reveal'd ;
 Nor neither bosom lodg'd a wish
 Which virtue keeps conceal'd.

What happy hours of heart-felt bliss
 Did love on both bestow !
 But bliss too mighty long to last,
 Where fortune proves a foe.

The father was a fordid man,
 Who love nor pity knew,
 Was all unfeeling as the rock
 From whence his riches grew.

Long had he seen their mutual flame,
 And seen it long unmov'd ;
 Then with a father's frown at last,
 He sternly disapprov'd.

In EDWIN's gentle heart a war
 Of differing passions strove ;
 His heart, which durst not disobey,
 Yet could not cease to love.

Deny'd her sight, he oft behind
 The spreading hawthorn crept,
 To snatch a glance, to mark the spot
 Where EMMA walk'd and wept.

Oft too in Stanemore's wintry waste,
 Beneath the moonlight shade,
 In sighs to pour his soften'd soul,
 The midnight mourner stray'd.

His cheeks, where love with beauty glow'd,
 A deadly pale o'ercast;
 So fades the fresh rose in its prime,
 Before the northern blast.

The parents now, with late remorse,
 Hung o'er his dying bed,
 And weary'd Heaven with fruitless pray'rs,
 And fruitless sorrows shed.

" 'Tis past," he cried, " but if your souls
 " Sweet mercy yet can move,
 " Let these dim eyes once more behold
 " What they must ever love."

She came; his cold hand softly touch'd,
 And bath'd with many a tear;
 First falling o'er the primrose pale
 So morning dews appear.

Now homeward as she hopeless went,
 The church-yard path along,
 The blast blew cold, the dark owl scream'd
 Her lover's fun'ral song.

Amid the falling gloom of night,
 Her startling fancy found
 In ev'ry bush his hovering shade,
 His groan in every sound.

Alone, appall'd, thus had she pass'd
 The visionary vale,
 When lo! the death-bell smote her ear,
 Sad sounding in the gale.

Just then she reach'd, with trembling steps,
 Her aged mother's door!
 "He's gone," she cried, "and I must see
 That angel face no more!

"I feel, I feel this breaking heart
 Beat high against my side:"
 From her white arm down sunk her head,
 She shiver'd, sigh'd, and died.

SECT. IX.

STORY OF A CLERGYMAN.

A CERTAIN English clergyman, eminent for his accomplishments, who had spent many years in travelling with a young nobleman, took up, at length, his residence in the neighbourhood of a great town, at the seat of his young pupil. He then entertained the firm persuasion, "that true
 "felicity and virtue consist in uniformly subject-
 "ing all the passions to the dictates of the under-
 "standing." His ardour for knowledge, and the constant succession of new objects, which naturally resulted from his ambulatory mode of existence, had hitherto rendered it no very difficult matter to realize this truth. But the moment he was settled, his mind began to vary with the scene. Where so many objects solicited his attention at the same time, some were unavoidably preferred. A fine garden, delightful arbours, a beautiful sheet of water, streams, cascades, grottos, wildernesses, large fields, delicious woods, and extensive plains, engrossed at first his whole attention. The united charms of such rural and enchanting scenes were his evening and morning amusement. Wherever he went on business or pleasure, he still felt a secret impulse recalling his affections to the spot where all his happiness naturally centered. Even here, however, like
 the

the first man in the bosom of paradise, he was soon far from being completely blessed. No longer absorbed in other pursuits, he sighed insensibly for a companion to share his enjoyments. Now, if a spotless maiden should appear; all innocence, and all soul; all love, and of love all worthy; if in her large arched forehead all the capacity of immeasurable intelligence, which wisdom can communicate, be visible; if her compressed, but not frowning eyebrows, speak an unexplored mine of understanding, or her dimpled cheek sympathetic goodness of heart, which flows through the clear teeth over her pure and efficient lips; if she breathe humility and complacency; if dignified wisdom be in each tone of her voice; if her eyes, neither too open nor too close, often gently turned, speak the soul that seeks a sisterly embrace; if she be superior to the powers of description; if all the glories of her angelic form be imbibed like the mild and golden rays of an autumnal evening sun; what do you think would become of our philosopher, and of his sublime theory?—Near this retirement, there chanced to reside a lady of most exquisite beauty; but, alas! she had not that sanctity of innocence, that divinity of maiden purity before described, but wiles affecting every look of modesty. She possessed the wretched pride of silence, a measured affectation of speech, eyes arrogantly overlooking misery and poverty, an authoritative nose, and

and lips blue with envy, or half bitten through from artifice or malice. The elegance of her person soon, however, attracted the attention of the philosopher, and fancying the mind must correspond, through the medium of a friend he obtained an interview. This lady, who was so well able to put on the mask, listened with attention to his discourse, and seemed eager to cultivate his acquaintance. Not insensible of the conquest she had made, she diverted her female friends with the tender sensibility of the *poor fool*, her lover, as she used to style him. This coquetry being managed with address, was nicely calculated to operate on an easy and unsuspecting mind. Imagine now the sensibility of the philosopher, who had singled out the fair by the kindest partiality, when assured she had all along regarded him with a similar emotion. His happiness became inseparable from her's. He soon, however, experienced all those teasing perplexities which the artifice of a cunning woman was able to contrive. The triumph of conquest was her only aim. So capricious and evanescent appeared the attachment of an inconsiderate and giddy mind. The impression on such, like those made on a stream by the gentlest breeze, exist but for a moment: far otherwise the attachment of the feeling, the susceptible, and the pensive. How infinitely more durable the tender sensibilities he indulged! He possessed, however, too much good

sense not to see through her duplicity; and to discover that she was trifling with the sensibilities of a heart, which thousands would have soothed and cherished with joy; yet to tear from his bosom all at once its dearest object on earth, occasioned the most serious and inexpressible concern. The struggle was indispensable, and competent to all his philosophy. It was reason asserting her supremacy over passion, and heaven striving for the mastery over man. At this interval, the lady removed the mask, and married a wild fortune-hunter, who soon brought her into contempt and wretchedness. Happy would it have been for our philosopher, could his wounded mind have been restored to its former health and tranquillity. But his heart was gone, and with it all relish for life. It was not henceforward in the power of medicine, variety, or expedient, to afford him the least interval of serenity. His nights and his days were alike dreary and joyless. The scenes, which had been the witnesses of his happier hours, now became the constant and solitary companions of his wretchedness. At last, overwhelmed with the monotony of the same thoughts, the brain sunk lethargic, and the philosopher was converted into the happier idiot, until death soon, fortunately, closed the melancholy and degrading scene.

SECT. X

STORY OF MONIMIA.

————— She flourish'd,
 Grew sweet to sense, and lovely to the eye ;
 Till at last the cruel spoiler came,
 Cropt this fair rose, and rifled all its sweetness,
 'Then threw it, like a loathsome weed, away.
OTWAY.

MONIMIA was the lovely and accomplished daughter of an aged and worthy country squire. A young officer, a man of birth and fashion, who lived in the neighbourhood, took advantage of the unwary disposition of this innocent girl, and afterwards cruelly deserted her.—She thus addresses him :

SINCE language never can express my pain,
 How can I hope to move when I complain ?
 Yet such is woman's frenzy in distress,
 We love to plead, tho' hopeless of redress.
 Perhaps, affecting ignorance, thou'lt say,
 ' From whence these lines ? whose message to
 ' convey ?'
 Mock not my grief with that feign'd cold demand,
 Too well you know the hapless writer's hand :
 But if you force me to avow my shame,
 Behold them prefac'd with MONIMIA's name.

Lost to the world, abandon'd and forlorn,
 Expos'd to infamy, reproach, and scorn,
 To joy and comfort lost, and all for you,
 And lost, perhaps, to your remembrance too ;
 How hard my lot ! what refuge can I try,
 Weary of life, and yet afraid to die !
 Of hope, the wretch's last resort, bereft,
 By friends, by kindred, by my lover, left.
 Oh ! frail dependance of confiding fools,
 On lovers oaths, or friendship's sacred rules !
 Too late in modern hearts, alas ! I find,
 MONIMIA's fall'n, and thou too art unkind !
 To these reflections, each slow-wearing day,
 And each revolving night, a constant prey,
 Think what I suffer, nor ungentle hear
 What madness dictates in my fond despair ;
 Grudge not this short relief—too fast it flies !
 Nor chide that weakness I myself despise.
 For sure one moment is at least her due,
 Who sacrific'd her all of life for you.
 Without a frown this farewell then receive,
 For 'tis the last my fatal love shall give ;
 Nor this I would, if reason could command,
 But what restriction reins a lover's hand ?
 Nor prudence, shame, nor pride, nor int'rest sways ;
 The hand implicitly the heart obeys :
 Too well this maxim has my conduct shown,
 Too well that conduct to the world is known.

Oft have I writ, as often to the flame
 Condemn'd the after-witness of my shame ;

Oft in my cooler, recollected thought,
 Thy beauties and my fondness half forgot;
 (How short those intervals for reason's aid!)
 Thus to myself in anguish have I said:

‘Thy vain remonstrance, foolish maid, give o’er;
 ‘Who act the wrong, can ne’er that wrong de-
 ‘plore.’

Then sanguine hopes again delusive reign,
 I form thee melting as I tell my pain.
 If not of rock thy flinty heart is made,
 Or tigers nurs’d thee in the desert shade,
 This would at least thy cold compassion prove,
 That slender sustenance of greedy love:
 Tho’ no return my warmer wishes find,
 Be to the wretch, tho’ not the mistress, kind;
 Nor whilst I court my melancholy state,
 Forget ’twas love, and thee, that wrought my
 fate.

Without restraint, habituate to range
 The paths of pleasure, can I bear the change?
 Doom’d from the world unwilling to retire,
 In bloom of life, and warm with young desire,
 In lieu of roofs, with proper splendor gay,
 Condemn’d in distant wilds to drag the day;
 Where beasts of prey maintain their savage court,
 Or human brutes (the worst of brutes!) resort.
 Yes, yes, this change I could unsighing see,
 For none I mourn, but what I find in thee:
 There centre all my woes; thy heart estrang’d,
 I weep my lover, not my fortune, chang’d.

Blest

Blest with thy presence, I could all forget,
 Nor gilded palaces in huts regret ;
 But exil'd thence, superfluous is the rest,
 Each place the same, my hell is in my breast ;
 To pleasure dead, and living but to pain,
 My only sense, to suffer and complain.

As all my wrongs distressful I repeat,
 Say, can thy pulse with equal cadence beat ?
 Canst thou know peace ? is conscience mute with-
 in ?

That upright delegate for secret sin ;
 Is nature so extinguish'd in thy heart,
 That not one spark remains to take my part ?
 Not one repentant throb, one grateful sigh ?
 Thy breast unruffled, and unwet thine eye ?
 Thou cool betrayer, temperate in ill !
 Thou, nor remorse, nor thought humane, canst
 feel :

Nature has form'd thee of the rougher kind,
 And education more debas'd thy mind.
 Born in an age when Guilt and Fraud prevail,
 When Justice sleeps, and Int'rest holds the scale ;
 Thy loose companions, a licentious crew,
 Most to each other, all to us untrue ;
 Whom chance, or habit mix, but rarely choice,
 Not leagu'd in friendship, but in social vice ;
 Who, indigent of honour, as of shame,
 Glory in crimes which others blush to name.

These are the leaders of thy blinded youth,
 These vile seducers laugh'd thee out of truth ;

Whose

Whose scurril jests all solemn ties profane,
Or Friendship's band, or Hymen's sacred chain.

With such you lose the day in false delight,
In lewd debauch you revel out the night.
(O fatal commerce to MONIMIA's peace !)
Their arguments convince because they please ;
Whilst sophistry for reason they admit,
And wander dazzled in the glare of wit.
So in the prism, to the deluded eye,
Each pictur'd trifle takes a rainbow dye ;
With borrow'd charms the gaudy prospect glows,
But truth revers'd the faithless mirror shows.

Oft I revolve, in this distracted mind,
Each word, each look, that spoke my charmer
kind ;

But oh ! how dear their memory I pay !
What pleasures past can present cares allay ?
Of all I love for ever dispossest'd ;
Ah ! what avails, to think I once was blest'd !

Thy fatal letters, O immoral youth,
Those perjur'd pledges of fictitious truth,
Dear as they were, no second joy afford,
My cred'lous heart once leap'd at ev'ry word,
My glowing bosom throb'd with thick-heav'd
sighs,

And floods of rapture rush'd into mine eyes :
When now repeated (for the theft was vain,
Each treasur'd syllable my thoughts retain)
Far other passions rule, and diff'rent care,
My joys are grief, my transports are despair."

Why

Why dost thou mock the ties of constant love ?
 But half its joys the faithless ever prove ;
 They only taste the pleasures they receive,
 When, sure, the noblest is in those we give.
 Acceptance is the heav'n which mortals know,
 But 'tis the bliss of angels to bestow.
 Oh ! emulate, my love, that task divine,
 Be thou that angel, and that heav'n be mine.
 Yes, yet relent, yet intercept my fate :
 Alas ! I rave, and sue for new deceit.
 First vital warmth shall from the grave return,
 Ere love, extinguish'd, with fresh ardour burn.
 Oh ! that I dar'd to act a Roman part,
 And stab thy image in this faithful heart ;
 There riveted to life secure you reign,
 Ah ! cruel inmate ! sharp'ning ev'ry pain :
 While, coward-like, irresolute I wait
 Time's tardy aid, nor dare to rush on fate ;
 Perhaps may linger on life's latest stage,
 Survive thy cruelties, and fall by age :
No—grief shall spread my sails, and speed me o'er
(Despair my pilot) to that quiet shore,
Where I can trust, and thou betray no more.

Might I but once again behold thy charms,
 Might I but breathe my last in those dear arms,
 On that lov'd face but fix my closing eye,
 Permitted where I might not live to die,
 My soften'd fate I wou'd accuse no more !
 But fate has no such happiness in store.

'Tis past, 'tis done—what gleam of hope behind,
 When I can ne'er be false, nor thou be kind?
 Why, then, this care—'tis weak—'tis vain—
farewel——

At that last word what agonies I feel!

I faint——I die——remember, I was true——

'Tis all I ask——*eternally——adieu !——*

SECT. XI.

CAUSE OF THE DEATH OF SAVAGE.

SAVAGE, that unfortunate genius, born, as he says,

“ Of a mother, and yet no mother !”

who, after he had been allowed £.200 *per annum*, by Lord TYRCONNEL, which was taken unjustly from him ; after he was pensioned by the QUEEN, on whom he had written verses, and the pension ceased at her demise ; after having tired his friends, who feared to acknowledge him, on account of his shabby dress, so expressive of his circumstances, being at length arrested and thrown into Newgate, for the small sum of eight guineas, he bore this last misfortune with uncommon fortitude. Six months elapsed in prison, when he received a letter from Mr. POPE, on whose kindness he had the greatest confidence, and to whom he applied, charging him with *ingratitude*, drawn up in such terms as resentment dictated. Mr. SAVAGE returned an answer, proving his innocence from the charge. The accusation, however, strongly affected his mind : he became immediately *melancholy*, and in a few days afterwards was seized with pains in his back and loins, which not being violent, he was not suspected to be

be in danger ; but daily growing more languid and *dejected*, on the 20th of July a fever seized upon his spirits. The last time the keeper saw him was on July the 31st, when SAVAGE, seeing him at his bed-side, said, with uncommon earnestness, “ I have something to say to you, Sir ;” but after a pause, moved his hand in a melancholy manner, and finding himself unable to recollect what he was going to communicate, added, “ It “ is over.” The keeper soon after left him ; and the next morning he was found dead.

SECT. XII.

HOGARTH.

CHURCHILL is said to have killed HOGARTH by the stroke of his pen. The painter made a caricature of CHURCHILL, and he in return wrote a satire on HOGARTH. He thus describes him :

Pale quiv'ring lips, lank checks, and fault'ring
tongue,

The spirits out of tune, the nerves unstrung,
Thy body shrivell'd up, thy dim eyes sunk
Within their sockets deep, thy weak hams shrunk,
The body's weight unable to sustain,
The stream of life scarce trembling through the
vein,

More than *half-kill'd* by honest truths, which fell,
Through thy own fault, from men who wish'd
thee well ;

Canst thou, e'en thus, thy thoughts to vengeance
give,

And, dead to all things else, to malice live ?

Hence, dotard, to thy closet, shut thee in,

* By deep repentance wash away thy sin ;

From haunts of men to shame and sorrow fly,

And, in the verge of death, learn how to die.

Vain

Vain exhortation ! Wash the Ethiop white,
 Discharge the leopard's spots, turn day to night,
 Controul the course of nature, &c.—

Thou wretched being, whom, on Reason's plan,
 So chang'd, so lost, I cannot call a man,
 What could persuade thee, at this time of life,
 To launch afresh into the sea of strife ?

Better for thee, scarce crawling on the earth,
 Almost as much a child as at thy birth,
 To have resign'd in peace thy parting breath,
 And sunk unnoticed in the arms of death.

Now, by my soul, it makes me blush to know
 My spirits could descend to such a foe,

&c. &c.

HOGARTH did not long survive this satire.

SECT. XIII.

STORY OF A WIDOW LADY

A widow lady, who lost an affectionate husband, an officer, was left in narrow circumstances, with a boy and girl, two beautiful and lively children, the one five and the other seven years of age; as her circumstances allowed her to keep but one maid servant, the two children were the sole attention, employment, and consolation of her life; she fed them, dressed them, slept with them, and taught them herself. They were both snatched from her by a putrid sore throat in one week; so that the poor woman lost, at once, all that employed her, as well as all that was dear to her. For the first three or four days after their death, when any friend visited her, she sat upright, with her eyes wide open, without shedding tears, and without utterance. Afterwards she began to weep much, and soon incessantly talked of nothing but of her dear children. Bereaved of all that made existence pleasant, a heavy gloom settled upon her mind, and her body became in consequence daily more emaciated and weak. These, indeed, are evils too terrible for the weakness of humanity to bear, and which admit of no remedy but the grave!

SECT. XIV.

MATILDA.

OUTRAGEOUS did the loud winds blow
 Across the founding main :
 The vessel, tossing to and fro,
 Could scarce the storm sustain.

MATILDA to her fearful breast
 Held close her infant dear :
 His presence all her fears increas'd,
 And wak'd the tender tear.

Now nearer to the grateful shore
 The moving vessel drew :
 The daring waves now ceas'd to roar,
 Now shout th' exulting crew.

MATILDA, with a mother's joy,
 Gave thanks to Heaven's pow'r.
 How fervent she embrac'd her boy !
 How blest the saving hour !

Oh ! much deceiv'd and hapless fair,
 Though ceas'd the waves to roar,
 Thou, from that fatal moment, ne'er
 Can'st taste of pleasure more.

For, stepping forth from off the deck,
 To reach the welcome ground,
 The babe, unclasping from her neck,
 Plung'd in the gulph profound.

Amazement chain'd ! her haggard eye
 Gave not a tear to flow,
 Her bosom heav'd no conscious sigh,
 She stood a sculptur'd woe*.

To snatch the child from instant death,
 Some brav'd the threat'ning main,
 And to recal his fleeting breath
 Try'd ev'ry art in vain.

But when the corse first met her view,
 Stretch'd on the pebbly strand,
 Rous'd from her ecstasy she flew,
 And pierc'd th' opposing band.

With

* This, though expressed in poetry, is a true picture of nature. CAMBYSES, when he conquered Egypt, made PSAMMETICUS, the king, prisoner; and, to try his constancy, ordered his daughter to be dressed in the habit of a slave, and to be employed in the meanest drudgery; his son was also led to execution with a halter about his neck. The friends of the king vented their sorrow in tears and lamentations: PSAMMETICUS only, with a downcast eye, remained silent. Some time after this meeting one of his countrymen, a man advanced in years, who, being plundered of all, was begging alms, he wept bitterly, calling him by his name. CAMBYSES was struck with wonder, and

With tresses discompos'd and rude,
 Fell prostrate on the ground ;
 To th' infant's lips her lips she glew'd,
 And sorrow burst its bound.

Now throwing round a troubled glance,
 With madness' ray inflam'd,
 And, breaking from her silent trance,
 She wildly thus exclaim'd :

“ Oh ! Oh ! his little life is fled,
 “ His heaveless breast is cold ;
 “ What tears will not the mother shed,
 “ When thy sad tale is told !

“ Ah me ! that cheek of livid hue—
 “ That brow—that auburn hair—
 “ Those lips where late the roses blew,
 “ All, all my son declare.”

She added not—but sunk oppress'd—
 Death on her eye-lids stole,
 While from her grief-distracted breast
 She sigh'd her tortur'd soul.

JERNINGHAM.

and enquired the reason of this difference. “ O, son of CY-
 “ RUS,” returned PSAMMETICUS, “ the calamities of my family
 “ are too great to leave me the power of weeping ; but the
 “ misfortunes of a subject, reduced in his old age to want of
 “ bread, is a fit subject for lamentation.”

" *PRACTICAL OBSERVATIONS.*

SECT. XV.

METHOD OF CONSOLING GRIEF

O! can'st thou minister to a mind diseas'd,
Pluck from the memory a rooted sorrow,
Raze out the written troubles of the brain;
And, with some sweet oblivious antidote,
Cleanse the stuff'd bosom of that perilous stuff
Which weighs upon the heart?

SHAKESPEARE.

THERE is nothing so difficult as the cure of passions of the mind, because application must be made to the mind itself, which is a diseased part, and which in return must apply its own remedy. This subject, however, merits some attention from every one, and requires great address. Persons unacquainted with human nature, are very apt to reason with people under their heaviest afflictions, instead of participating in their sorrow. We have a precept against this manner of consoling from the eloquent pen of Pliny, who addressing Marcellinus, says :

“ I write to you, impressed with the deepest sorrow: the youngest daughter of my intimate friend Fundanus is dead ! Never surely was there a more agreeable and more amiable young person.

son, or one who better deserved to have enjoyed a long, I had almost said, an immortal life ! She was scarcely sixteen, and yet united the wisdom of age and discretion of a matron, with the sprightliness of youth, and sweetness of virgin modesty. With what an endearing fondness did she hang on her father's neck ! How kindly and respectfully behave to us his friends ! How affectionately treat all those who, in their respective offices, had the care of her education ! She employed much of her time in study and reading ; indulged herself in few diversions, and entered even into those with singular caution and reserve. With what forbearance, with what patience, with what fortitude, did she endure her last illness ! She complied with all the directions of her physicians ; encouraged the hopes of her sister and her father ; and when her strength was totally exhausted, supported her spirits by the sole force of her own mind. The vigour of her mind indeed continued, even to her last moments, unbroken by the pain of a long illness, or the terrors of approaching death : a reflection which renders the loss of her so much the more sensibly to be lamented by us. It is a loss infinitely indeed severe ! and aggravated by the particular conjuncture in which it happened ! She was contracted to a most worthy youth ; the wedding-day was fixed, and we were all invited. How sad a change from the highest joy to the deepest sorrow ! How shall I express

the wound that pierces my heart, when I heard Fundanus himself (as grief is ever fond of dwelling upon every circumstance to increase the affliction) ordering the money he had designed to lay out upon clothes and jewels for her marriage, to be employed in myrrh and spices for her funeral! He is a man of great good sense and accomplishments, having applied himself, from his earliest youth, to the noblest arts and sciences; but all the maxims of fortitude and philosophy which he has derived from books, or delivered by his own precepts, he now absolutely rejects; and every firmer virtue of his heart gives place to paternal tenderness. You will excuse, you will even approve his grief, when you consider what a loss he has sustained! He has lost a daughter who resembled him in his manners, as well as his person, and exactly copied out all her father. If you should think proper to write to him upon the subject of a calamity so justly to be deplored, let me remind you not to urge severer arguments of consolation, which seem to carry a sort of reproof with them, but to use those only of a gentle and sympathizing humanity. Time will render him more open to the dictates of reason: for, as a recent wound shrinks from the hand of the surgeon, but gradually submits to, and even requires the means of cure; so a mind under the first impression of a misfortune shuns and rejects all the persuasions of reason, but at length, if applied

plied with tenderness, calmly and willingly resigns itself to consolation. Farewel."

In the play of *Electra*, by Sophocles, we have an example of the different methods of consoling, with their effects, extremely well pointed out. The scene lies just before the gates of the palace of *Ægisthus*; on the back part of it is represented a view of the two cities of Argos and Mycenæ, the temple of Juno, and the grove of Io, which must, altogether, have made a noble and magnificent appearance, as the Greeks spared no expence in the decorations of their theatre.

ELECTRA appears before the palace of *ÆGISTHUS*, thus complaining:

O! sacred light, and O! thou ambient air!
 Oft have ye heard *ELECTRA*'s loud laments,
 Her sighs, and groans, and witnessed to her woes,
 Which ever as each hateful morn appeared
 I poured before you; what at eve retired
 I felt of anguish my sad couch alone
 Can tell, which watered nightly with my tears
 Received me sorrowing; that best can tell
 What pangs I suffered for a hapless father,
 Whom not the god of war with ruthless hand
 Struck nobly fighting in a distant soil,
 But my fell mother and the cursed *ÆGISTHUS*,
 The partner of her bed, remorseless slew.
 Untimely didst thou fall, lamented shade,
 And none but poor *ELECTRA* mourns thy fate;
 Nor

Nor shall she cease to mourn thee, while these eyes
 View the fair heavens, or behold the sun ;
 Never, O! never! like the nightingale
 Whose plaintive song bewails her ravished brood ;
 Here will I still lament my father's wrongs,
 And teach the echo to repeat my moan.
 O! ye infernal deities, and thou,
 Terrestrial Hermes, and thou, Nemesis,
 Replete with curses, and ye vengeful furies,
 Offspring of gods, the ministers of wrath
 To vile adulterers, who with pity view
 The slaughtered innocent, behold this deed!
 O! come, assist, revenge my father's murder ;
 Quickly, O! quickly bring me my ORESTES * ;
For

* ORESTES was saved in his cradle from his mother, and
 concealed by ELECTRA. He is reported to be dead, and his
 urn is brought to the palace of ÆGISTHUS, king of Mycenæ,
 by Phocians, but instead of bearing the ashes of ORESTES,
 he himself comes to revenge his father's murder—and being
 admitted into the palace, CLYTEMNESTRA is murdered. By
 this time ÆGISTHUS returns to the palace.

ÆGI. Which of you knows aught of these Phocian guests
 Who come to tell us of ORESTES' death?
 You first I ask, ELECTRA, once so proud
 And fierce of soul; it doth concern you most;
 And therefore you, I think, can best inform me?

ELE. Yes, I can tell thee; is it possible
 I should not know it? that were not to know
 A circumstance of dearest import to me.

ÆGI. Where are they, then?

ELE. Within.

ÆGI. And spake they truth?

ELE.

For lo I sink beneath oppressive woe,
And can no longer bear the weight alone.

THE

ELE. They did; a truth not proved by words alone,
But facts undoubted.

ÆGI. Shall we see him then?

ELE. Ay, and a dreadful sight it is to see.

ÆGI. Thou art not wont to give me so much joy;
Now I am glad indeed.

ELE. Glad may'st thou be,
If aught there is in that which can give thee joy.

ÆGI. Silence within, and let my palace gates
Be opened all; that Argos and Mycenæ
May send her millions forth to view the sight;
And if there are who nourish idle hopes
That still ORESTES lives, behold him here,
And learn submission, nor inflame the crowd
Against their lawful sovereign, lest they feel
An angry monarch's heaviest vengeance on them.

ELE. Already I have learned the task, and yield
To power superior.

Scene opens, and discovers the body of CLYTÆMNESTRA
extended on a bier, and covered with a veil.

ORESTES, PYLADES, GOVERNOR OF ORESTES, ÆGISTHUS,
ELECTRA, CHORUS, and a crowd of SPECTATORS from
the city.

ÆGI. What a sight is here!

O! Deity supreme! this could not be
But by thy will; and whether NEMESIS
Shall still o'ertake me for my crimes, I know not.
Take off the veil, that I may view him well;
He was by blood allied, and therefore claims
Our decent sorrows.

ORE. Take it off thyself;
'Tis not my office; thee it best befits
To see and to lament.

ÆGI.

THE CHORUS ENTERS.

CHO. O! wretched daughter of an impious mother!

Wilt thou for ever mourn, for ever thus
With unavailing tears, and endless sorrow,
Lament the royal AGAMEMNON's fate,
By a vile woman's wicked arts betrayed?

ELE.

ÆGI. And so it does;
And I will do it; send CLYTÆMNESTRA hither.

[Taking off the veil.

ORE. She is before thee.

ÆGI. Ha! What do I see?

ORE. Why, what's the matter? what affrights thee so?
Do you not see him?

ÆGI. In what dreadful snare
Am I then fallen?

ORE. Dost thou not now behold
That thou art talking with the dead?

ÆGI. Alas!
Too well I see it, and thou art—ORESTES.

Of all the catastrophes, ancient or modern, which I remember to have met with, this of ELECTRA appears to me infinitely the most interesting, natural, and truly dramatic.—There cannot possibly be a spectacle more affecting than the scene before us; a tyrant, murderer, and adulterer, is represented as exulting on the death of the only person in the world whom he had to fear, and whose dead body he expects to see before him; instead of this, on lifting up the veil, he is shocked, not with the corpse of ORESTES, but that of his own wife; he perceives at once that CLYTÆMNESTRA is murdered, that ORESTES is alive and close to him, and that he has nothing to expect himself but immediate death: the sudden change of fortune to all the persons concerned, the surprise and despair of ÆGISTHUS, the joy and triumph in the countenances of ORESTES and ELECTRA, must altogether have exhibited a picture

ELE. Ye come to comfort me, I know ye do,
I know my tears are fruitless all and vain;
But O! permit me to indulge my griefs,
For I must weep.

CHO. Thy tears can ne'er recal him
From the dark mansions of the common grave,
No, nor thy prayers; they can but make thee,
wretched,
And sink thee deeper in calamity;
Why art thou then so fond of misery?

ELE. Devoid of sense and feeling is the heart
 That can forget an injured parent's wrongs.
 I love the airy messenger of Jove,
 The mournful bird that weeps her Ity's fate,
 And every night repeats the tender tale:
 Thee too I reverence as a goddess, thee,
 Unhappy Niobe ! for still thou weep'st,
 And from the marble, tears eternal flow.

CHO. But O! reflect that not to thee alone
Misfortune comes, that comes to all*: behold
Iphianassa,

picture worthy the pencil of a **RAPHAEL** to execute: how it was acted on the Greek stage, we cannot pretend to determine, most probably with taste and judgment. Let the English reader conceive those inimitable actors, **PALMER**, **KEMBLE**, and **Mrs. SIDDONS**, in the parts of **ÆGISTHUS**, **ORESTES**, and **ELECTRA**, and from thence form to himself some idea of the effect which such a catastrophe would have on a British audience.

* The Chorus here employ *reasoning*.—"I will restore your daughter again to life," said the Eastern sage, to a prince who grieved immoderately for the loss of a beloved child, "provided you are able to engrave on her tomb the names " of

Iphianassa, and Chrysothemis *,

And him who hides his grief, illustrious youth,
The loved ORESTES, these have suffered too.

ELC. ORESTES! yes, Mycenæ shall receive
In happy hour the great avenger; Jove
With smiles auspicious shall conduct him to me;
For him alone I wait, for him, a wretch
Despised, of children and of nuptial rites
Hopeless I wander; he remembers not
What I have done for him, what suffered, still
With airy promises he mocks my hopes,
And yet he comes not to me.

CHO. But he will.

Despair not, daughter; Jove is yet in Heaven,
The god who sees, and knows, and governs, all:
Patient to him submit †, nor let thy rage
Too far transport thee, nor oblivion drown
The just remembrance of thy matchless woes;
Time is a kind, indulgent deity,
And he shall give thee succour, he shall send

“of three persons who have never mourned.” The prince made inquiry after such persons; but found the inquiry vain, and was silent.

* *Iphianassa and Chrysothemis.* Homer II. (Book IX.) mentions three daughters of Agamemnon, Chrysothemis, Laodice, and Iphianassa. Euripides takes no notice of any but Iphigenia, (who was sacrificed) and ELECTRA. Possibly the Laodice of Homer is the ELECTRA of Sophocles. The poets took the liberty of changing circumstances of this nature, not essential to the subject, as they thought proper.

† The Chorus next employ *religion*.

The

The god of Acheron, from Chrysa's shores
To bring Orestes, and avenge thy wrongs.

ELE. O! but the while how much of life is
gone!

And I a hopeless, wretched orphan still,
Without a friend to guard, or to protect me;
Disgraced, dishonoured, like a stranger clad
In base attire, and fed with homeliest fare.

CHO. Sad news* indeed the hapless messenger
To Argos brought, that spoke the wished return
Of thy loved father to his native soil;
Fatal the night when Agamemnon fell
Or by a mortal or immortal hand;
The work of fraud and lust †, a horrid deed!
Whoe'er performed it ‡.

ELE. O! detested feast!
O! day, the bitterest sure that ever rose!
With him I perished then; but may the gods
Repay the murderers; never may they hear
The voice of joy, or taste of comfort more!

* Finding these not avail, the Chorus now *participate* in the sorrows of ELECTRA.

† *The work of fraud and lust.* Ægisthus and Clytæmnestra are said to have watched Agamemnon as he came out of the bath, when they threw over his head a shirt without any opening at the neck; entangled in this they murdered him; thus was the scheme laid by fraud and treachery, and executed by lust.

‡ *Whoe'er performed it.* The Chorus seem fearful of attributing so great a crime to Clytæmnestra and Ægisthus, which they knew them however guilty of.

CHO.

CHO. Cease thy complaints, already hast thou
suffered

Forthy loud discontents, and threatened vengeance.
'Tis folly to contend with power superior*.

ELE. Folly indeed, and madness! *but my griefs
Will force their way, and whilst ELECTRA breathes
She must lament*; for who will bring me comfort,
Or sooth my sorrows? let me, let me go,
And weep for ever.

CHO. 'Tis our love intreats;
Trust me, we feel a mother's fondness for thee,
And fain would save thee from redoubled woes.

ELE. And would ye have me then neglect
the dead?

Forget my father? Can there be such guilt?
When I do so, may infamy pursue me!
And if I wed, may all the joys of love
Be far removed! if vengeance doth not fall
On crimes like these, for ever farewell justice,
Shame, honour, truth and piety, farewell!

CHO. Pardon me, daughter; if my warmth
offend,

Glad I submit; we'll follow, and obey thee†.

ELE. *I am myself to blame, and blush to think
How much unfit I seem to bear the weight
Imposed upon me; but indeed 'tis great:
Forgive me, friends, a woman born as I am,
Must she not grieve to see each added minute*

* They recur again to reasoning.

† They change *their mode* and see the effect.

Fraught with new miseries? thus to be a slave
 E'en in my father's house, and from those hands
 Which shed his blood, to ask the means of life!
 Think what my soul must suffer to behold
 The cursed *ÆGISTHUS* seated on the throne
 Of *AGAMEMNON*, in the very robes
 Which once were his! to see the tyrant pour
 Libations forth e'en on the fatal spot
 Where the sad deed was done! but, worst of all,
 To see the murderer usurp his bed,
 Embrace my mother (by that honoured name
 If I may call a guilty wretch like her,)
 Who, pleased, returns his love, and, of her crimes
 Unconscious, smiles, nor fears th' avenging furies;
 But ever as the bloody day returns
 Which gave the royal victim to her wiles,
 Annual the dance and choral song proclaim
 A solemn feast *, nor impious sacrifice
 Forgets she then to her protecting gods.
 Shocked at the cruel banquet, I retire,
 And in some corner hide my griefs, denied
 E'en the sad comfort to indulge my sorrows;
 For *CLYTEMNESTRA* in opprobrious terms
 Reviles me oft, "To thee alone, she cries,
 "Is *AGAMEMNON* lost, detested maid!
 "Think'st thou *ELECTRA* only weeps his fate?

* *Proclaim a solemn feast.* Nothing could add more to the horror of the crime than such a circumstance. *CLYTEMNESTRA*, not content with murdering her husband, institutes a solemn feast in commemoration of the happy event, and calls it, with cruel raillery, the supper of *AGAMEMNON*.

“Perdition

" Perdition on thee ! may th' infernal gods
 " Refuse thee succour, and protract thy pains !"
 Thus rails she bitter, and if chance she hear
 ORESTES is approaching, stung with rage,
 Wild she exclaims, " Thou art th' accursed cause,
 " This is thy deed, who stole ORESTES from me,
 " And hid him from my rage ; but be assured,
 " E'er long my vengeance shall o'ertake thee for it !"

These threats her noble lord still urges on ;
 'That vile adulterer, that abandoned coward,
 Whose fearful soul called in a woman's aid
 To execute his bloody purposes.

Meantime, ELECTRA sighs for her ORESTES,
 Her wished avenger ; his unkind delay
 Destroys my hopes ; alas ! my gentle friends,
 Who can bear this, and keep an equal mind ?
 To suffer ills like mine, and *not to err*

From wild distraction, would be strange indeed.

CHO. But say, ELECTRA, is the tyrant near ?
 Or may we speak our thoughts unblamed ?

ELE. Thou mayst ;
 I had not else beyond the palace dared
 To wander hither.

CHO. I would fain have asked thee——

ELE. Ask what thou wilt, ÆGISTHUS is far off.

CHO. Touching thy brother then, inform me
 quick

If aught thou know'st that merits firm belief*.

* The Chorus finding ELECTRA somewhat appeased by giving vent to grief, now turn the subject of discourse.

ELE. He promises, but comes not.

CHO. Things of moment
Require deliberation and delay.

ELE. O! but did I delay to save ORESTES?

CHO. He boasts a noble nature, and will ne'er
Forget his friends: be confident.

ELE. I am;
Were I not so, I had not lived till now.—

[The bustle of the Play now commences.]

SECT. XV.

CONSOLATIONS FROM CHRISTIANITY.

As *Christians*, we are able to employ more powerful persuasives against excess of sorrow.

Many are the sayings of the wise
In ancient and in modern books inroll'd,
Extolling PATIENCE as the truest fortitude:
And to the bearing well of all calamities,
All chances incident to man's frail life.—
Many are the consolatory writs, form'd
With studied argument, and much persuasion,
But with th' afflicted in his pangs such sounds
Little prevail, or rather seem a tune
Harsh, and of dissonant mood from his complaint,
Unless he feel within
Some source of CONSOLATION FROM ABOVE,
Secret refreshings, that repair his strength,
And fainting spirits uphold.

MILTON.

When a feeling heart is oppress'd with some painful disease in his body, or wrung with some sore distress of mind, every former comfort, at that moment, usually goes for nothing. Life is beheld in all its gloom. A dark cloud seems to hang over it; and it is too often reviled, as no other than a scene of wretchedness and sorrow. But this is to be unjust to human life, as well as ungrateful to its

its Author.—Let me only desire you to think how many days, how many months, how many years, you have passed in health, and ease, and comfort ; how many pleasurable feelings you have had ; how many friends you have enjoyed ; how many blessings, in short, of different kinds you have tasted ; and you will be forced to acknowledge, that more materials of thanksgiving present themselves than of lamentation and complaint.—These blessings, you will say, are past. But though past, ought they to be gone from your remembrance ? Do they merit no place in the comparative estimate of the goods and evils of your state ? Did you, could you, expect, that in this mutable world, any temporal joy was to last for ever ? Has gratitude no influence to form your minds to a calm acquiescence in your **BENEFACTOR**'s appointments ? What can be more reasonable than to say, “ Having in former times received so many good things from the hand of **GOD**, shall I not now, without despondence, receive the few evils which it hath pleased him to send ? ”—If we are deprived of friends whom we tenderly loved, are there not still some remaining from whom we may expect much comfort ? If our bodies are afflicted with sore disease, have we not reason to be thankful that our mind continues vigorous and entire ; that we are in a situation to look around us for whatever can afford us ease ; and that after the decay of this frail and mouldering

VOL. IV. G tabernacle,

tabernacle, we can look forward to a *house not made with hands, eternal in the heavens?*—In the midst of all distresses there remains to every sincere *Christian*, that mixture of pure and genuine consolation which springs from the promises and hopes of a future life. Consider, I beseech you, what a singular distinction this makes in your situation, beyond the state of those who, under the various troubles of life, are left without hope; without any thing to look up to, but a train of unknown causes and accidents, in which they see no light nor comfort.—Thank the FATHER OF MERCIES, that into all the evils he sends, he infuses *joyful hope*, that *the sufferings of the present time are not worthy to be compared with the glory that shall be revealed in the end to the virtuous and good.*

Have we sustained the greatest of all losses, that of a child, reflect, that if it is our loss, it is his gain that he yet liveth *, that this life is but the threshold, the portal, the entrance to a palace, the prelude to a better play, and that his happiness is as complete, as our misery is great. Let us turn

* The Christian religion teaches us, that the moment of the separation of the soul from the body, that the soul is instantly embodied and received up into Paradise. Hence the appearance of Moses and Elias in an embodied form. Hence the expression of our Saviour, “this day shalt thou be with me in *Paradise*.” Hence the vision of St. Paul, “I was caught up into the *third heaven*, whether in the body, or out of the body, I cannot tell, God knoweth.”

our eyes from earth to heaven, from the perishable body to that which endureth for ever; and even whilst we are heavy with affliction, let us smile, with our eyes turned upwards, and say,
 “ It is thy will, I submit.—He is happy.—I would
 “ not wish him back to a troublesome world.—
 “ I soon shall follow after him.—The mortal
 “ hath put on immortality.—We shall then meet,
 “ never, never, to be separated more.”

SECT. XVII.

ADVICE TO PARENTS AND MEN OF FORTUNE.

Marriage is sure a matter of more worth
 Than to be subject for attorneyship.
 For what is wedlock forced but a hell,
 An age of discord and continual strife?
 Whereas the contrary bringeth forth blifs,
 And is a pattern of celestial peace.

SHAKESPEARE.

IN W——, a small village of Saxony, there lived a poor but honest and upright Curate, who for many years had enjoyed, without alloy, the tranquil pleasures of domestic happiness. He had a wife and an only daughter. Content within the sphere in which they were placed, and unacquainted with the turbulent passions of the fashionable world, their days flowed quietly on in an uniform course of undisturbed felicity. The mother and daughter took a joint care of all the domestic concerns, and strove, by every considerate act of attention and love, to diminish the burthen which the duties of the good old man imposed on him. HARRIOT (this was the name of his daughter) was, in the strictest sense of the words, the child after his own heart. He was unhappy if she was absent even for a few hours, and she was therefore his constant attendant.

She

She was about eighteen years old, but had not yet experienced the inquietudes of that passion which often exhibits itself in very early life in the great world, and her principles and mode of thinking were too noble and good to inspire her parents with even the slightest apprehensions as to the wanderings of her heart—But hear her history.

It is the custom, in that country, for the cavalry to be quartered, during the time of peace, in different villages, where it is maintained at the expence of the peasantry. Many of these soldiers are riotous young men, who, by virtue of their profession and uniform, have an entrance into the houses of all the peasantry, and even of the curates. One of them, a handsome but giddy young man, was quartered at W——, where he soon made the acquaintance of the good old parson.

The young soldier had more culture of mind than is commonly met with in such a class of men. He pleased the curate; they met frequently, and often sat up till past midnight, entertaining themselves with the histories of battles and warlike atchievements, of which each of them knew an abundance of anecdotes.

HARRIOT found great entertainment in the company of the warrior, and like OTHELLO's mistress, the story of his life, the battles, sieges, fortunes that he had past, the hair-breadth 'scapes,
the

the moving accidents by flood and field, o'ercame her heart. Love had taken possession of her bosom before she was aware of its approach. The progress of this passion, when once admitted into the human breast, is certain as fate. She blushed when he took her by the hand, and was unhappy when he left her. The soldier could not resist the beautiful girl, his heart was formed for love; they therefore soon came to an explanation, but carefully concealed their mutual attachment from her parents; for they were justly afraid that prudential motives would cause them to oppose it. They bound themselves to each other, however, by an oath, which at the same time that it shewed the strength of their affection, exhibited the most romantic turn of mind. They promised to marry each other as soon as he should attain the rank of Serjeant-major, and agreed *that the one should destroy the other who first failed in the engagement.*

Thus matters stood when, contrary to the hopes of the lovers, a lawyer from a neighbouring town applied to the father of HARRIOT for the hand of his daughter. He was well received, and his views promoted by the old people; but when his intention was declared to the unfortunate girl, she fell into the arms of her father as if struck with lightning, and upon her recovery she wept bitterly, and intreated him not to encourage the addresses of this new lover.

Her

Her parents, being ignorant of the true cause of her aversion, thought that time alone would overcome it, and they therefore gave their solemn promise to the lawyer, and resolved to employ every means in their power to second his wishes. HARRIOT, however, resisted every argument, and remained true to her promise ; but her parents at last, growing tired of her opposition, determined to employ their authority. The arguments that were made use of are needless to mention, and they were attended with success. The young soldier soon received the intelligence, and from that moment desisted from visiting the parsonage. His resolution was taken—for without the girl he could not live.

A short time *before* the marriage-day, a dance was given in W— in honour of the pair. To this he resorted, unable any longer to resist the desire of seeing his once beloved. He concealed himself among the spectators until he saw her dance ; this roused him to a state of fury ; he ran home, took a pair of pistols which were loaded, and waited until the party broke up. It was a dark night, but he discerned the unhappy bride and her bridegroom, walking hand in hand. He stepped up to her, and in a low voice requested that she would indulge him with a moment's conversation. She disengaged her arm from that of the lawyer, intreated him to walk on, assuring him she would immediately return ; but alas ! it was the last minute

minute of her existence: a pistol shot was heard, and when her friends reached the place, she was seen lying weltering in blood at the feet of her murderer. "Now art thou mine again!" cried the soldier, "our oaths are fulfilled;" and with these words he disappeared, favoured by the obscurity of the night; but he did not fly to escape. He delivered himself to the officers of justice who were nearest the place, and desired to be instantly executed; which event indeed soon followed.

Learn, parents, from this story, the danger of marrying your children to those they cannot love; for should an event less tragical ensue than the above, yet what should be their paradise would be hell, and your grand-children the worthy offspring of such purchased connubial rites.

If children inherit the eyes and forehead of their parents, it is certain that they as often are heirs to the internal formation of their viscera. Nothing is more certain than that there are *hereditary diseases*, or what comes to the same thing, predisposition to such. Men of fortune and opulence have it in their power to obey the laws of nature and of love; and yet how common are the examples of such men acting an interested part in their matrimonial engagements. Instead of following the dictates of nature, they disregard the high privilege they enjoy, sacrifice their taste, their passion, and often their happiness during life, at the shrine of gold. To accomplish this
sordid

fordid end, they often embrace deformity, disease, ignorance, peevishness, and every thing that is disgusting to the generous mind. The consequences do not affect them only, but the public. Men of rank, in all nations and governments, are the natural guardians of the state. For these important purposes, their minds should be noble, generous, and bold ; and their bodies should be strong, masculine, fit to encounter the fatigues of war, and to repel every hostile assault that may be made upon their country. But when men of this description, whatever be their motives, intermarry with weak, deformed, puny, or diseased females, their progeny must of necessity degenerate. The strength, beauty, and symmetry of their ancestors, are, perhaps, for ever lost. What is still more to be regretted, debility of body is almost invariably accompanied with weakness of mind. Thus, by the avarice of one individual, a noble and generous race is completely destroyed. By reversing this conduct, it is true, the breed may again be mended ; but to repair a single breach, many generations, endowed with prudence and circumspection, will be requisite. A successive degeneration, however, is an infallible consequence of imprudent or interested marriages of this kind. One puny race may for some time be succeeded by another, till at last their constitution become so feeble, that the animals lose even the faculty of multiplying their species.

This

This gradual degeneration is a great cause of the total extinction of some of our noble families. That it should be so, is a wise and beneficent institution of nature; for if such debilitated races were continued, an universal degeneration might soon take place, and mankind would be unable to perform the duties, or to undergo the labour of life. NATURE thus first chastises, and at last extirpates, all those who act contrary to her established laws.

Certainly more than one half of the miseries of life arise from marriages contracted where there previously existed *no love*; arising from the sordid opposition of friends and relations to *suitable matches*, who are always looking out for a lord for their relation, or a rich heiress for their son, thwarting honest inclinations, and rendering their children the melancholy victims of the most corroding of all passions, *disappointed love*; or, as they ought to be, marrying without love, from obedience or desire, *miserable for ever*.

I. TEMPORARY EXHAUSTION
OF
THE FIBRES.

SECT. XVIII.

OF TEMPORARY EXHAUSTION.

THE fibres as well as the nerves are under the same laws, being subject alike to *exhaustion*, which is either TEMPORARY, OR IRREPARABLE.

In the state of *temporary exhaustion*, the fibre fails for want of IRRITABILITY. The application of the ordinary stimulus, while it is in *this state*, will not make it contract. It is only by little and little that the fibre recovers its IRRITABILITY. This truth, I dare venture to say, is *as new* as it is *striking*, and it unfolds a vast number of phenomena hitherto unexplained.

Let us observe, for example, *the motion* of the heart;—*the heart* contracts from the stimulus of the blood, and impels the blood through the arteries; it then again dilates, and the blood enters. But *the heart* does not contract itself *immediately* upon the first impression of the blood. Its IRRITABILITY having been lessened by the preceding contraction, it requires half, or three quarters of a second, before the IRRITABILITY of the heart shall have been recruited to such a degree that the stimulus can act upon it.

Thus also during the operation of an emetic or cathartic, the stomach and bowels are *alternately*
in

in a state of *excitement* and *repose*. And thus the most violent pains and labour of a parturient woman, if not effectual for the expulsion of the offspring, *cease* for a time, and are then *renewed*. Thus likewise all the appetites are liable to fits, returning after cessation at stated periods; if it be hunger, at the distance of some hours; if it be fever, it may be explained on the same principle; that is, to say, any stimulus which is always present, and continually acting upon the fibres, produces no sensible effect till the *exhausted irritability* of the fibre shall have *accumulated* afresh.

You can scarcely touch the leaf of the *mimosa*, or *sensitive plant*, so slightly as not to make it close. The large rib which runs along the middle of the leaf, serves as an hinge on which the two halves of the leaf turn on being touched, till they stand erect, and by that means meet one another. The *slightest touch* gives this motion to one leaf; if a *little harder*, it gives the same motion to the leaf opposite. If the touch be *still rougher*, the whole arrangement of leaves on the same rib close in the same manner. If it be *stronger still*, the rib itself moves upwards towards the branch on which it grows. And if the touch be yet *more rough*, the very branches shrink up towards the main stem.

In August, one of these plants growing in a pot was put into a carriage. The motion of the carriage caused it to shut up all its leaves, and the effect of *this great stimulus* was, that it did not again
expand

expand its leaves for more than four and twenty hours. A TORPOR then ensued: for having opened their leaves, they *closed* no more for three days and as many nights.—Being then brought again into the open air, the leaves *recovered* their natural motions, *shutting each night*, and *opening in the morning*, as regularly as ever.

All the *periodical motions* of animals, may be explained upon the same principle; that is to say, any *stimulus* which is always present, and continually acting upon the fibre, produces no sensible effect till the *exhausted irritability* of the fibre shall have been *accumulated* afresh. The *periodical motions* in organized bodies depend on the *alternate exhaustion* and *accumulation* of the *irritability* of the fibre. A *temporary exhaustion* of the *irritability* of the *hedysarum gyrans*, is produced by the heat of the sun and by electricity. The electrical fluid *exhausts* in like manner the *irritability* of the *mimosa*.

SECT. XIX.

EFFECTS OF WINE.

LET us consider the stimulating or exciting power of *wine*. When a depressed man is insufficiently excited with the *natural stimuli*, and rises not, suppose, above 30 degrees in his excitement, a glass carries him up to 32 degrees, another to 34 degrees, and so forth, till after five glasses he is carried up to 40 degrees, he then finds himself well and vigorous in all his functions. But still we are not so flimsily made, as not to bear a little of what is either *too much* or *too little*. Suppose he then takes five glasses more, and consequently is raised to 50 degrees. As his spirits, his intellectual, and all his other functions, were low, while his excitement remained at 40 degrees, so are they all proportionally exalted by the time that his excitement is elevated to 50 degrees. Let him still go on, and his intellectual functions will rise still higher; he will now display the full extent of his genius; and his passions and emotions of whatever kind they be.—If he goes on, *how will the appearance be reversed!* The hero soon shrinks
into

into a mere brute. He falls off in both his intellectual and corporeal functions; his tongue, his feet, his eyes, his memory, fail him; and at last, deprived of all power of motion and sense, he sinks into an inanimate SLEEP*.

* *How will the appearance be reversed! The hero becomes the mere brute, and finally sinks into an inanimate SLEEP.* These expressions of John Brown are nearly verbatim the same as Armstrong, which see over-leaf. Many such resemblances make me suspect that Brown caught up his first idea from the poet, which he worked up into his beautiful system. Vide Vol. II. p. 160, where the same thing was before hinted at.

PRACTICAL OBSERVATIONS.

SECT. XX.

ON DRINKING.

- “ STRUCK by the powerful charm, the gloom
 “ dissolves
 “ In empty air ; *Elysium* opens round.
 “ A *pleasing phrenzy* buoys the lighten’d soul,
 “ And *sanguine hopes* dispel your fleeting care ;
 “ And what are difficult, and what was dire,
 “ Yields to your *proweßs* and *superior stars* :
 “ The happiest you, of all that e’er were mad,
 “ Or are, or shall be, could this folly last.
 “ But *soon your heaven is gone* ; a *heavier gloom*
 “ Shuts o’er your head : and, as the thundering
 “ stream,
 “ Swoln o’er its banks with sudden mountain rain,
 “ Sinks from its tumult to a SILENT brook ;
 “ So, when the *frantic raptures* in your breast
 “ Subside, you *languish into mortal man* ;
 “ You SLEEP,—and waking find yourself *undone*.
 “ FOR PRODIGAL OF LIFE IN ONE RASH NIGHT
 “ You

“ YOU LAVISH'D MORE THAN MIGHT SUP-
 “ PORT THREE DAYS.

“ A *heavy morning*, comes; your *cares* return

“ With tenfold rage,” &c.

ARMSTRONG.

Let those who have been enticed frequently to taste spirituous liquors, or rich cordials, till at length they begin to have a fondness for them, reflect a moment on the danger of their situation, and resolve to make a speedy and honourable retreat. Remember, that custom soon changes into habit: that habit is a second nature more stubborn than the first, and of all things most difficult to be subdued. Remember, that it is by little unsuspecting beginnings, that this unfortunate vice is generally contracted, and when once confirmed, rarely terminates but with life! Learn then, in time, to resist this bewitching spirit, whenever it tempts you. Then will you find yourself so perfectly easy without it, as at length never to regret its absence; nay, peculiarly happy in having escaped the allurements of such a dangerous and insidious enemy.

The manner however of overcoming this fatal propensity, when once formed, requires some address in the physician. It is in vain to desire an immediate desertion of this habit. Human nature is too frail. It cherishes knowingly the usurper in its bosom. Art must be used. The

drunkard must be advised to change his liquor, taking rum instead of brandy, and then Geneva ; afterwards it must be diluted, and in time it may without much difficulty be changed for ale, or porter, and a habit broken, or else fixed upon some less hurtful liquor than spirits*.

To those who pride themselves in living fast, and are bent upon “ a short and merry life ;” though, in truth, it is a short and miserable one ; they will doubtless spurn at these admonitions, and run headlong to their own destruction. Strange infatuation ! Can you submit to such despicable bondage, and tamely give up your freedom without one generous struggle. The present conflict, remember, is not for the fading laurel, or tinselled wreath, for which others so earnestly contend, but for those more blooming, more substantial honours, which HEALTH, the daughter of TEMPERANCE, only can bestow. For it is thine, O HEALTH, and thine alone, to diffuse through the human breast that genial warmth, that serene sunshine which glows in the cheek, shines in the eye, and animates the whole frame ! But if still you have no regard for this blessing, let me then remind you of an HEREAFTER. “ To

* I once cured a patient of this propensity by ordering a small portion of emetic tartar to be put into the brandy bottle. This, when taken to excess, produced nausea, or vomiting ; and the idea getting associated, even the sight of it became afterwards disgusting.

“ die—to sleep—nay, perchance, to dream”—yes, *there's the rub!*—How great will be your surprize and terror should you be suddenly roused by that dream!—When the thick mist is dispelled—when the day begins to dawn, and discovers you on the confines of that unknown country!—When **THE SUN OF RIGHTEOUSNESS**——But here let me stop, for exhorting, and not preaching, is my province. To the divine it belongs to resume the subject where I am obliged to drop it, and to expatiate on those higher arguments, which, with a trembling pen, I have scarcely ventured to suggest.——

SECT. XXI.

OF OPIUM AND HEMLOCK.

IF a grain of *opium* be swallowed by a person unused to such a strong stimulus, all the vascular system in the body acts with greater energy, all the secretions, and the absorption from those secreted fluids, are increased in quantity, and much pleasure is introduced into the system, independent of our ordinary train of thinking, which adds an additional stimulus to that already too great.

After some time *the excitability becomes diminished in quantity*, being expended by the great activity of the system; and hence, when the stimulus of the opium ceases, the fibres will not obey their *natural stimuli*, and a *consequent torpor* ensues, as is experienced by drunkards, who, on the day after a great excess of spirituous liquor, feel tremor, palpitation of the heart, head-ach, and general debility. During this *torpor* an *accumulation of excitability* in the exhausted fibres takes place, which is so great, as to occasion a *second over-exertion* on the application even of the *ordinary stimuli*, and thus an *unequal balance* of the *excitability* and of the *natural stimuli* continues for two or three days, where the stimulus employed has been violent in degree; and for weeks in some fevers, from the stimulus of contagious matters.

But

But if a *second dose* of opium be exhibited before the fibres have regained their natural quantity of due excitability, its effects will be much less than the former, because the *excitability* is in part *exhausted* by the previous excess of exertion. Hence all medicines repeated frequently gradually lose their effect. Thus aloetic purges lose their efficacy by repetition; and opium and tobacco, if not taken beyond their usual doses, cease to stupify and intoxicate those who are habituated to their use.

But when a stimulus is repeated at *such distant intervals* of time, that the natural quantity of *excitability* becomes completely *restored* in the acting fibres, it will then act with the same energy as when first applied. Hence those who have lately accustomed themselves to large doses of opium or aloes, by beginning with small ones, and gradually increasing them and repeating them frequently; if they *intermit* the use of it for a few days only, must begin again with as small a dose as they took at first, otherwise they will experience the inconvenience of an over-dose.

A lady labouring under a cancer of her breast, was advised to the use of cicuta (hemlock); and she accordingly got a quantity of it in powder, and weighed out the doses of it for herself. She began with a small dose; and feeling no sensible effects from that, she went on increasing the quantity. By the time she had come to 60 grains, she had

had

had taken the whole parcel she had got from the apothecary, and therefore sent to him for a fresh parcel of the powder. In the interim she had been advised, that when she was to pass from one parcel to another, she should begin with a small dose only ; therefore, as she had taken 60 grains of the former, she should take 20 of the new parcel. But such was the effect of *intermission*, says Dr. CULLEN, who relates this story in his *Materia Medica*, that these 20 grains had very nigh killed her. In 10 or 15 minutes she was affected with sickness, tremor, giddiness, delirium, and convulsions. Happily for her the sickness proceeded to a vomiting, which threw up part or the whole of the powder, but notwithstanding this the delirium, and even the convulsions, continued many hours.

PRACTICAL OBSERVATIONS.

SECT. XXII.**OF THE CUSTOM OF TAKING LAUDANUM.**

OPIMUM is certainly the most sovereign remedy in the materia medica, for easing pain and procuring sleep, and also the most certain antispasmodic yet known; but, like other powerful medicines, becomes highly noxious to the human constitution, and even mortal, when improperly administered.

The first effects of opium are like those of a strong, stimulating cordial, but are soon succeeded by universal languor or irresistible propensity to sleep, attended with dreams of the most rapturous and enthusiastic kind. After those contrary effects are over, which are generally terminated by a profuse sweat, the body becomes cold and torpid; the mind pensive and desponding; the head is affected with stupor, and the stomach with sickness and nausea. Its liberal and long continued use has been observed greatly to injure the brain and nerves, and to diminish their influence on the vital organs of the body. By its first effects, which are exhilarating, it excites a kind of temporary delirium, which dissipates and exhausts the spirits; and, by its subsequent narcotic

cotic power, occasions confusion of ideas and loss of memory, attended with nausea, giddiness, headache, and constipation of the bowels; in a word, it seems to suspend or diminish all the natural secretions and excretions of the body, that of perspiration only excepted.

Those who take opium to excess become enervated, and soon look old; when deprived of it, they are faint, and experience the languor and dejection of spirits common to such as drink spirituous liquors in excess; to the bad effects of which it is similar, since, like those, they are not easily removed without a repetition of the dose.

By the indiscriminate use of that preparation of opium called *Godfrey's Cordial*, many children are yearly cut off; for it is frequently given, dose after dose, without moderation, by ignorant women and mercenary nurses, to silence the cries of infants, and lull them to sleep, in order to prevent nursing, by which they are at last rendered stupid, inactive, and rickety. Nor do grown up people receive less injury often from the same enticing medicine. They soon become so bewedded to their night-draught, that they must have of the apothecary one every night, or a box of pills, and these become at length absolutely necessary articles. Unfortunate infatuation! What was sent as a solace in the moment of affliction must now be had daily recourse to.

II. PERMANENT EXHAUSTION
OF
THE FIBRES.

SECT. XXIII.

OF IRREPARABLE EXHAUSTION.

THE fibre is said to be in a state of *irreparable exhaustion*, when it does not recover its due degree of IRRITABILITY, and fails upon the application of the *proper stimuli*. All then is languor and debility. The actions within the body are insufficient, or nearly so, for the maintenance of life.

Mille modis lethi fors una fatiget.

The same lot of death harasses in a thousand ways, yet terminates, however, in the same point, the extinction, sooner or later, of the *irritable principle* within the body.

SECT. XXIV.

THE ABUSE OF TONIC MEDICINES.

OF the evil effects from the abuse of TONIC MEDICINES we may relate the history of the *Portland Powder*, called so from its having cured, of an hereditary and inveterate gout, one of the dukes of that name. It consists of equal parts of the following herbs, viz.

Take the roots of round BIRTHWORT,
 _____ and GENTIAN,
 The tops & leaves of small GERMANDER,
 _____ lesser CENTAURY,
 _____ and ground PINE. Equal parts.
 Powder them.

A dram of this powder was ordered to be taken, in some convenient liquid, in a morning, fasting, the patient tasting nothing for an hour and an half after it; it must be used in this dose for *three months* without the least interruption. Forty-five grains are to be taken daily in the same manner for the succeeding *three months*: half a dram every day for the next *six months*; and half a dram every other day during the *second year*.

From very ancient times down to the present, *aromatic bitters* have been recommended and employed for the gout; and as this remedy, on its
 first

first coming into use in England, seems to have been of service, and to have cured several, it might have been expected, had not its consequences been often found hurtful, that the use of it would have continued, and this disease would have ceased to be one of the opprobria medicorum. We find, however, that while at one period a course of bitters, prolonged above a year, has been in fashion in this disease, at another it seems to have been entirely neglected; and this I can impute only to its being attended often with consequences more serious than the gout itself. That the latter was the case, we may presume from the accounts of the ancients, who, though they recommend the remedy in *certain constitutions* as highly beneficial, allow that in other cases it has been as highly pernicious.

In nine instances, says Dr. CULLEN, I had occasion to know, or to be exactly informed, of the fate of persons who had taken the *Portland Powder* for the time and in the quantities prescribed. These persons had been liable for some years before to have fits of a regular or very painful inflammatory gout; but after they had taken the medicine for some time, they were quite free from any fit of inflammatory gout; and particularly when they had completed the course prescribed, had never a regular fit, or any inflammation of the extremities, for the rest of their life. In no instance, however, was the health of these persons

persons tolerably entire. Soon after finishing the course of their medicine, they became valetudinary in different shapes; and particularly were much affected with *dyspeptic*, and what are called *nervous complaints*. In those whom I knew, some *hydroptic symptoms* appeared, which gradually increasing in the form of an *ascites* or *hydrothorax*, especially the latter joined with *anasarca*, in less than two, or at most three years, proved fatal. These accidents happening to persons of some rank, became very generally known in this country, and has prevented all such experiments since,

SECT. XXV.

THE ORDINARY STIMULI.

At first, the *infant*,
 Mewling and puking in the nurse's arms :
 And then, the whining *school-boy* with his satchel,
 And shining morning face, creeping like snail
 Unwillingly to school. And then, the *lover* ;
 Sighing like furnace, with a woeful ballad
 Made to his mistress' eye-brow. Then, the *soldier* ;
 Full of strange oaths, and bearded like the pard,
 Jealous in honour, sudden and quick in quarrel,
 Seeking the bubble reputation
 Even in the cannon's mouth. And then, the *justice*,
 In fair round belly, with good capon lin'd,
 With eyes severe, and beard of formal cut,
 Full of wise saws and modern instances,
 And so he plays his part. The *sixth age* shifts
 Into the lean and slipper'd pantaloons,
 With spectacles on nose and pouch on side ;
 His youthful hose, well-fav'd, a world too wide
 For his shrunk shanks ; and his big manly voice,
 Turning again towards childish treble, pipes
 And whistles in its sound. *Last scene of all*,
 That ends this strange eventful history,
 Is second childishness, and mere oblivion ;
Sans teeth, sans eyes, sans taste, sans every thing.

SHAKESPEARE.

THE babe is a compound of matter so organized as to be capable of being acted upon by various stimuli, necessary to the continuance of life ; and immediately upon its birth the first stimulus it receives is a quantity of atmospheric air in the lungs ; this, with the addition of some milk, or mild food, taken into the stomach, is all the stimulus it seems capable of bearing, at this period,

period, consistent with life and health; the external senses cannot endure any strong action on them; hence the tympanum, or drum of the ear, is kindly covered for some time after birth with a thick mucus, occasioning deafness; and the eyes are shut against, or turn from, the impression of strong light. In this state, as was before shewn, there is the *keenest irritability*; the smallest stimulus, even that of the air of a chamber, more especially the purer and colder air abroad, and the mildest food, so act upon it, and exhaust it, as to produce almost constant sleep.

From day to day the *irritability* of the fibre gets *diminished*, as is known to us by the circumstance of the same stimulants having a lesser effect on the fibre, in proportion as we advance from infancy to puberty, and from puberty to manhood. At this period of life, viz. about thirty-five years of age, it appears that there exists, as it were, a just equilibrium between the powers of the *ordinary stimulants* and the *irritability* in the muscular fibre; yet, at the same time, as the continued application of the ordinary stimuli is absolutely necessary to life and health, so the daily effects of these is a small degree of *exhaustion* of *irritability*, restored nearly by periodical sleep. But again, according to the organization of our bodies, though sleep restores the healthy state of *irritability* in a certain degree, yet it seems never to restore actually *the former state*; a small degree of *exhaustion* of *irritability* takes place every year. This gradual change, consequently,

consequently, not only indicates the power of bearing, but also the necessity of the application of *stronger stimuli*, as we advance in life; until at last, that state takes place which we call *old age*, which is little affected by the ordinary, and scarce sensible of the stronger, stimuli; and as these gradually cease to make the impressions necessary to the continuance of life, *the death of old age* must ensue*.

* Vide Vol. I. Sect. III. on STIMULI, which must be varied according to the age of the individual; which verifies the old adage, that MILK is the food of *infants*, and WINE of *old age*.

PRACTICAL OBSERVATIONS.

SECT. XXVI.

THE EFFECTS OF DRUNKENNESS.

THE state of the frame, in consequence of *frequent inebriety*, consists in the end, if it does not occasion immediate death, in the *paralysis* which usually succeeds long and violent excitement. Sometimes the stomach is more materially affected, and *paralysis* of the lacteal system is induced; whence a total abhorrence from flesh food and general emaciation. In others, the lymphatic system is affected with *paralysis*, and dropsy is the consequence. More frequently the secretory vessels of the liver become first *paralytic*, and a *torpor*, with consequent gall-stones, or schirrus, of this viscus, is induced with concomitant jaundice; or it becomes *inflamed* in consequence of *previous torpor*, and this inflammation is frequently transferred to a more sensible part, which is associated with it, and produces the rosy eruption of the face, or some other eruption on the head, or arms, or legs. In some it aggravates the *torpor* of the liver produced by schirrus, gall-stones, or eruption, and in these epilepsy, or infamy, are often the consequence*.

* Barwin.

PRACTICAL OBSERVATIONS.

SECT. XXVII.

THE ART OF PROLONGING LIFE.

VARIOUS have been the panaceas for the prolonging of human life. Sage was supposed by the ancients to have this virtue*: but the

* Hence the following verse. *Cur moriatur homo, cui salvia crescit in horto?* How can man die, in whose garden there grows sage? in allusion to its many virtues.—What a shameful abuse of this pretended property was lately made by the late Sir John Hill, in his patent Tincture of Sage for the prolonging of human life, and warding off old age, is known to every one. This conduct could not fail to draw upon himself the pen of the wits of the age, and Garrick, with Thompson, conjointly, published the following Epigram:

Thou essence of dock, valerian, and sage,
At once the disgrace and the pest of this age,
The worst that we wish thee, for all thy bad crime,
Is to take thy *own physic*, and read thy *own rhymes*.

Dr. Hill made the following reply:

Ye desperate junto, ye great, or ye small,
Who combat dukes, doctors, the deuce, and 'em all,
Whether gentlemen, scribblers, or poets in jail,
Your impertinent curses shall never prevail:
I'll take neither sage, dock, or balsam of honey;
Do you take the physic, and I'll take the money.

The reader will please to call to mind what has been said on quackery, Vol. I. p. 201. Such shameless impositions on common sense deserve more than *ridicule*; for deceiving the sick and helpless, they merit the *execrations* of every man who has one spark of humanity.

secret

secret lies in a very narrow compass, a temperate use of all the means of excitement. Old age happens to mankind at different periods of life, earlier, if they have given themselves up to pleasure and a variety of excesses, and later with those who have followed a moderate way of living, and been generally temperate in their enjoyments.

O! TEMPERANCE! thou support and attendant of other virtues! Thou preserver and restorer of health, and *protractor of life*! Thou maintainer of the dignity and liberty of rational beings, from the wretched inhuman slavery of Sensuality, Taste, Custom, and Example! Thou brightener of the understanding and memory! Thou sweetener of life and all its comforts! Thou companion of reason, and guard of the passions! Thou bountiful rewarder of thy admirers and followers! how do thine excellencies extort the unwilling commendations of thine enemies! and with what rapturous delight can thy friends raise up a panegyric in thy praise!

CLASS III:

**VEGETABLE AND ANIMAL
*POISONS.***

*PRACTICAL OBSERVATIONS.***SECT. XXVIII.****OF VEGETABLE AND ANIMAL POISON.**

WE are arrived now at a very interesting part of our work, the consideration of vegetable and animal poisons. By considering them together, and the practice recommended from the best authorities, in obviating their influence, we shall see whether any analogy exists between them, and may, perhaps, be able to form some philosophic induction, and improve this part of the branch of medicine. In thus separating infectious diseases from the rest of those maladies which humanity is heir to, we have deviated from all former systems, and this division is presented, with the utmost diffidence, before a candid and discerning Public.

SECT. XXIX.

RATIONALE OF THE OPERATION OF OPIUM, AND
THE MANNER OF OBVIATING IT.

THE attention of physicians has deservedly been turned towards OPIUM, in order to ascertain its salutary operation on the animal œconomy, and its powers as a poison. After having been so long employed, it may seem surprising that any contrariety of opinion should exist among liberal minds; but some still deem it altogether *sedative* in its operation; others *stimulant*; and others again both *stimulant* and *sedative*. This controversy appears to have its rise from the difference in effect which takes place according as it is administered.—As a *stimulant* it stands before wine, and has nearly the same operation. WINE quickens the pulse, raises the spirits, increases vigour, and gives more than common animation for the time; but no sooner are the fumes of the intoxicating drink exhausted, than the drunkard becomes weak, enervated, and depressed in spirits. Here we distinctly see both the *stimulant* and *sedative* power of wine; and the same exactly holds with regard to opium. Thus if any one is under the pressure of sleep, he will, by OPIUM, be rendered surprisingly sprightly, lively, and vigilant; it banishes melancholy; begets confidence; converts fear

fear into boldness, makes the silent eloquent; and dastards brave. Has it not the same effect upon the Turks that *wine* has upon us? Or are we to suppose, that the troops of that people, on their march to the onset of battle, chew *opium* with the intention of checking their natural alacrity and propensity to action, and of blunting and depressing their high spirits and courage? But after awhile, the *excitability* becomes *diminished* in quantity, being *expended* by the great activity of the system; and hence, when the stimulus of the opium ceases, the fibres will not obey their *natural stimuli*, and a *consequent torpor* ensues, as is experienced by drunkards, who on the day after a great excess of spirituous liquor, feel *tremor*, *head-ach*, and *general debility*. During *this torpor* an *accumulation* of *excitability* in the exhausted fibres takes place, which is frequently so great as to occasion a second *over-exertion* from even the *ordinary stimuli*, and thus an *unequal balance* of the *excitability* and *natural stimuli* may continue for *two* or *more days*.

But where the dose first administered is *great*, its *sedative effects* are almost immediately perceived. By a solution of opium, injected into the stomach of a frog, while the transparent membrane of its toes was under a good microscope, the dose being *small*, there was at first an *increase*, and afterwards a *diminution* of the blood's velocity. By a second and larger dose, given an hour after the first,

first, the blood was seen to move immediately slower, and its velocity gradually decreasing, it stagnated at length, and the animal expired.

A solution of opium injected into the intestines of a dog, brought on *palsy* of his posterior extremities, attended with convulsions and stupor.

Some days after, when the dog was recovered, the like solution was injected, by a perforation through the integuments, into the abdomen of the same dog: he became *paralytic* instantaneously, and died in a few minutes.

We are now to enquire, *by what channel does opium act?*—Seeing the many *erroneous opinions* that have prevailed, we should be careful how we suffer ourselves to be led away by *great authorities*, and should bow our assent only to *facts*, and *such conclusions* as naturally result from them.

We are to enquire, “*whether opium acts by means of the BLOOD on the irritable fibre,*” as will be proved with the other poison, or “*has its operation solely on the NERVES?*”

Notwithstanding it appears certain, that opium, even when simply dissolved in water, whether it is introduced into the stomach, or into the intestines; whether it is injected beneath the skin, or into the abdomen; whether it be applied to the heart or muscles; equally acts on the animal body: yet a doubt still remains whether its action and energy are wrought on the *nerves*, or whether it needs the vehicle of the *blood*, and the circulation, to give it activity.

It is certain that all poisons, as well as *opium*, kill when swallowed; but this does not prove that their action is wrought immediately on the *nerves*, and that they do not employ the medium of the *blood*. There are we know in nature principles attractive and destructive of each other, and may not the subtle and active particles of a poison, penetrate from this law of affinity, and introduce themselves into the *blood*? We are under the necessity of admitting unknown powers, of whose principles and mechanism we are ignorant. We allow that iron is attracted by the magnet, though we are wholly ignorant of magnetism. Thus the difficulty which arises from the mortal effects of opium, when taken internally, does not prove that it acts immediately on the *nerves*; and besides, it can be demonstrated, that the venom of the *viper* and *ticunas* have no immediate action on the *nerves* themselves*.

To be enabled to make some very probable assertion on this difficult matter, an experiment

* 1st. FONTANA divided the *nerves* going to the leg of a rabbit, it was rendered *insensible* and *paralytic*. He then applied the venom to the leg, and though the *nervous influence* was intercepted; it communicated all the symptoms of the poison of the viper.

2d. On the contrary, when the *veins* and *arteries* going to, and returning from, the leg were *intercepted*, and the poison inserted, it did not communicate the disease of the venom of the viper.

And 3d. When the *nerves* were separated from the body, and surrounded with venom, it produced no symptoms of this disease.

must

must be imagined in which opium may act freely against the nerves, without the smallest introduction of it into the *blood*, or rather, without its touching the *blood-vessels*. Such an experiment, considering the dexterity and precision it requires, is not one of the easiest to make, and can be only well tried on very small animals, and on a very few of the nerves. To obtain certain consequences, and such as do not proceed from deceitful and variable experiments, it was necessary to make a great many trials, to exclude all the results that accidental circumstances might have rendered imperfect, to compare the different consequences with each other, and to weigh them in each case with those of the experiments intended to serve as comparative ones.

I destined, says FONTANA, 300 frogs for these experiments, and by means of pincers and scissars, I laid bare the *crural nerves* in such a manner as they were entirely free of every other part, and obtained about eight or ten lines of nerve totally clear, and in some very large frogs even more. I then let fall the nerves of each thigh into a small hollow glass, which receives them in such a way, that I can fill each glass with a fluid of any kind without its touching the adjacent muscles. I usually have been able to put into these glasses such a proportion of whatever I wish to try on the nerves, as to cover the greater part of them with it, without its being possible for any of the
liquor

liquor to find its way to the thighs, and mix with the blood. In this way I can make a comparison betwixt the nerves that are envenomed, and those that are not, compute the time that they continue to contract the muscles, and judge of the vivacity of the motions.

At the end of the first *ten minutes*, I stimulated the medicated nerves; I shall distinguish in this way those to which I applied the opium, and those which were not medicated, and found that the two extremities, the right as well as left, contracted with the same force and vivacity.

At the end of *twenty minutes*, I tried the stimulation, and could perceive *no sensible difference* betwixt the motions of the two feet, which were almost as lively as those in the first experiment.

At the end of *thirty minutes*, the motions of the two feet were feebler, but *alike* in both.

At the end of *forty minutes*, the feet scarcely contracted; but their distinct muscles were clearly seen to contract, when the crural nerves were stimulated; and the motions of these muscles were *equally* lively in each foot.

At the end of *fifty minutes*, the motions were very small, but *alike* in both sides.

At the end of *eighty minutes*, there was no longer any motion to be observed in several of the frogs, in whatever way I stimulated either their crural nerves that were medicated, or those that were not.

I can

I can conceive, adds FONTANA, nothing more decisive and more certain, than from this series of experiments, that the action of OPIUM is not directly on the *nerves*; and when I related these experiments to Sir John PRINGLE, he very frankly told me, that for his part “ *he had never too great a belief in the explanation given of NERVOUS DISEASES, and that for the future he should have less faith in the doctrine than ever.*”

In order to make this point still clearer, I wished to see whether opium, when injected into the vessels, causes death, and whether it produces the same derangements in the animal œconomy, when introduced into the circulation of the blood, as it does when swallowed, or injected into the different organs and viscera.

I injected about eighteen drops of the aqueous solution of opium into the jugular vein of a large rabbit. It was scarcely injected when the animal felt drowsy, could no longer support itself, and fell down. It, however, recovered in a few hours, and became perfectly well.

I next injected a tea-spoonful of the same aqueous solution into the vein of another rabbit, and it died *instantly*.

I repeated this experiment on a third rabbit, with the same quantity of solution, and it died also at *the moment* of injection.

Thus then *opium*, injected into the veins, produces heaviness, and even death itself.

Wine or alcohol produces, as I found, pretty nearly the same effects.

I conceive it to be altogether superfluous to relate a greater number of experiments on opium injected into the jugular vein, and introduced into the circulation, without its touching any of the wounded solids. When once it is received into the vessels, I do not see how it can communicate itself in an immediate way to any of the *nerves*, since all-prying anatomy assures us, that the coats of the blood-vessels are not furnished with any *nerves*, and we have a further confirmation of this point from an experiment made by the celebrated professor of anatomy at Edinburgh.

I discovered, says Dr. MONRO, when I poured a solution of opium under the skin of the thigh and leg of a living frog, not only the leg itself was very soon affected, but the affection was communicated to the *most distant part* of the body: but if, previous to the application of opium, I cut out the heart, or cut across the femoral blood-vessels, the effects of the opium were not communicated from that limb to *distant parts*,—which seems to prove how much the circulation of the blood, and the fluid of the machine, is the vehicle for opium, and that without this fluid it would have no action on the living body.

Having cut out the heart of a young kitten, says Dr. JAMES JOHNSON, it notwithstanding
continued.

continued its natural movements in a very lively and regular manner. In that state I put it into a tea-cup containing some laudanum: in a moment the pulsations of the heart ceased, and could not be removed by any kind of stimulus.

Having divided the heart of another kitten, says this ingenious experimentalist, into two *pieces*, out of the body, one of them was thrown into laudanum, a little diluted with water, and it soon lost its pulsatory motions, and stimuli had no power or effect in restoring them: but *the other half* of the heart, lying at the same time upon the table, contracted very briskly whenever it was touched with the point of a needle or a knife, and that long after the part steeped in diluted laudanum remained immoveable.

The same events happened to a piece of *intestine*, cut out, when dipped in laudanum: the peristaltic motions, which were brisk before, ceased instantly, and could not be removed by stimuli; yet *another piece* of the small gut, cut out, lying on the table, continued to move and twist itself with great vivacity when it was stimulated.

Does not OPIUM then act upon the *muscular fibres* through the medium of the *blood*? Does not the motion and power of these fibres depend upon their union with OYGEN, chiefly taken into the body by respiration, and diffused by the circulation of the blood? And does not its *action* consist in *disuniting* the OXYGEN from *these fibres* so

so rapidly, by changing the law of *ELECTIVE* ATTRACTION, as to extinguish their *vitality*, before they can have a fresh and adequate supply of *VITAL AIR*?—The sudden extinction of life, and the state of the body after death, entitled the ingenious Dr. BEDDOES to make these suggestions; and start an opinion, which an enlightened and reformed system of physic will soon, perhaps, satisfactorily elucidate.

Mr. Y——, of the age of fifty years, took by mistake, at bed-time, about ten drachms of laudanum: he had a fit of the gout at the time. No alarm was given till about four o'clock next morning, when excessive drowsiness and languor came on: after that he took repeated doses of the *OXYD* of *ANTIMONY*, (antimony combined with oxygen) by which some of the laudanum was rejected by vomiting.

I saw him, says Dr. JOHNSON, about nine the same morning: his paleness, languor, and lethargic disposition, were very great; his pulse beat languidly, about thirty-eight strokes in a minute. By stimulating his throat with a volatile embrocation, he was empowered to swallow a cathartic: blisters were applied to the back and arms; and sinapisms to his feet. He took, by my direction, coffee frequently, and after each dose of it, a desert spoonful of *VINEGAR* *. He was also carried out, and well shaken in a post chaise on a

* *Vinegar* owes its acidity to the absorption of *VITAL AIR*.

rough road. About four o'clock in the afternoon, he was so much roused, that his pulse beat at least seventy strokes in a minute. The dangerous sedative power of this enormous dose of opium was thus obviated, and his brain put into such a state of vigilance, that the ensuing evening he passed a restless night. He then returned to his usual state of health.

We have a case still more to our point in a letter from Colonel BRAITHWAITE BOUGHTON, to Dr. BEDDOES, in Part III. of *his Observations on the Medicinal Use of Facitious Airs, and their Production.*

TO DR. BEDDOES.

Poston Hall, July 24, 1795.

SIR,

Having for a considerable time been troubled with Rheumatic pains, it was recommended to me to take a mild opiate every night on going to bed, and in the event of that dose not proving sufficiently soporific, I was to add to it a few drops of laudanum, for which purpose I had procured a three-ounce phial of laudanum. Nevertheless, being unwilling to accustom myself to the use of opium, I generally postponed taking the opiate till extreme pain and want of sleep rendered it absolutely necessary. In one of these moments, about four o'clock in the morning,

I reached

I reached out my hand to the table, on which, by mistake, my servant had placed the phial containing the laudanum, and believing this to be my usual night-draught, I poured out the contents into a tumbler glass, and drank it off. I soon perceived my mistake by the taste of the laudanum, but from my immediate relief from pain, accompanied by a certain pleasing languor, it was some time before I could rouse myself so as to call assistance. Being, however, perfectly convinced that I must soon beat a quick march to the other world, unless my stomach was eased of the poison it contained, I rang the bell, and ordered some warm water. It was sometime before this could be got ready. As soon as it was brought, I drank large quantities, but without any effect. The apothecary was then sent for, who gave me three several doses of VITRIOLATED ZINC*, when at last they succeeded so well, that I brought up a considerable quantity of the laudanum. In the morning early I sent for Dr. THORNTON, who administered the VITAL AIR †, and ordered me LEMONADE ‡, which,

* This metal, like the rest, has no power until it be combined with oxygen.

† Dr. THORNTON, in his observations on this case, remarks that the VITAL AIR was very rapidly consumed, which must recal to the reader's mind the celebrated experiment of SPALDING, recorded in Vol. I. p. 89.

‡ A mixture of lemon, sugar, and water.

from the weak state of my stomach, was almost as speedily returned, but perfectly *sweet* to the taste, and so deprived of all *acidity* *, as to be like sugar and water, and did not effervesce with alkali. This was frequently repeated, when in the evening I ate my dinner, without any sensible difference, and felt the next day much as usual. This is the simple fact, to the best of my remembrance; if it can be of any use in a science which has for its object the ease and happiness of mankind, I shall always look back with pleasure to an accident which has afforded me an opportunity of giving you this detail. I have the honour to be,

SIR,

Your most obedient Servant,

G. C. BRATHWAITE BOUGHTON.

P. S. Among the Indians, who take great quantities of solid opium, when they wish to remove the effects of stupefaction, they drink plenty of lime juice, which they know, from experience, produces that effect.

* The *acid principle* has been before proved to be derived from the OXYGEN, OR VITAL AIR.

SECT. XXX.

POISONS OF THE VIPER, ASPIC, AND POLYPUS.

I PROCURED, says FONTANA, fifty of the strongest and largest frogs I could meet with. I preferred these animals because they are livelier than others; because they die with greater difficulty: and, lastly, because their muscles contract even several days after they are dead. I had each of them bit by a *viper*, some in the thigh, others in the legs, back, head, &c. Some of them died in less than half an hour, others in an hour, and others again in two and three hours. There were likewise others among them that fell into a languishing state, their hind legs that had been bitten continuing very weak and *paralytic*. In some of them I contented myself with introducing cautiously into a wound, made with a lancet at the very instant, a drop of venom. These last lived longer than those I had caused to be bit; neither of them however escaped. A short time after these animals had either been bit, or wounded and venomed, the *loss* of their *muscular force* was very evident. When they were set at liberty, they no longer leaped, but dragged their legs and bodies along with great difficulty, and could scarcely withdraw their thighs when violently ir-

ritated: by degrees they became motionless, and *paralytic* in every part of the body, and, after continuing a very short time in this state, died.

I now opened the abdomen, and stimulated the nerves that pass through it in their way from the vertebræ to the thighs. I employed the strongest corrosives, but could excite no motion or tremulus in the lower extremities. I pricked the muscles with as little effect, and thrust a long pin into the spinal marrow, without producing any motion or trembling either of the muscles or limbs. In none of these parts was there a vestige of *sensibility* or *irritability*. The nerves were no longer the instrument of motion. The muscles no longer contracted, or were sensible to stimuli. The heart alone, in a few of them, continued to move languidly, and its auricles were filled and *blackened* by the blood which it seemed incapable of dispelling. This motion, and these oscillations, were however but of short duration.

Persons have been met with, who having been bit by a viper, have remained *paralytic* in some particular part of the body during life. A short time ago a woman in TUSCANY, who had been bit in the little finger by a viper, became, after various other complaints, *paralytic* throughout the whole right side of her body, and could never be cured. In a word, it is certain that all those who have met with this accident complain soon after of an *universal weakness*. Their muscles refuse

fuse their office. They become dull and heavy, have no longer the free exercise either of body or mind, and fall insensibly into a kind of *lethargy*: so true it is, that this venom induces a *palsy* of the muscles, and robs them of their active property, called by the moderns *animal irritability*.

The *aspic* also kills by occasioning a sudden *drowsiness* and *universal weakness*, followed by death, in the animal struck by it. Hence it seems that all the persons supplied by the animal kingdom, occasion death by *exhausting* the *irritability* of the moving fibres.

But of all the poisonous animals hitherto known, the *polypus* seems to possess the most powerful and active venom. However irritable these creatures may be in other cases, and difficult to kill, the *polypus* succeeds instantly in extinguishing the principles of motion and life in *water-worms*. What is very singular, its mouth or lips have no sooner touched this worm, than it expires; so great are the force and energy of the poison it conveys into it. No wound is however found in the dead animal. The *polypus* is neither provided with teeth, nor any other instrument calculated to pierce the skin, as I have assured myself, says FONTANA, by observing it with excellent microscopes.

If we reflect on the effects of OPIUM, its mode of action will also clearly illustrate this subject. That vegetable juice, if taken in a *large dose*, begins

gins by rendering an animal weak and torpid, and soon kills it by *exhausting* the *irritability* of the muscular fibres, as I have several times observed in animals with cold blood, and as the famous BARON DE HALLER demonstrated a long time ago, even in those that have the blood warm.

The symptoms and accidents that follow *the bite* of the *viper*, do not differ essentially from those I have just spoken of, and may at least induce one to suspect that the venom of that animal likewise kills by totally destroying the *irritability* of the fibres.

Both of them act by exciting violent *convulsions* and *vomiting*. Each conveys an *universal debility* into the organs. They render the muscles *paralytic*, make the animal *heavy*, and finally bring on *lethargy* and *death*.

It avails nothing to animals with cold blood, that they are endued with an obstinate life, and are capable of preserving that, as well as motion, after they are cut to pieces. If either of these poisons attacks the principle of their motion, that is, destroys OXYGEN upon which the IRRITABLE PRINCIPLE depends, they die speedily; all motion is annihilated in them, and their parts will no longer give any signs of life. Their body, it is true, will preserve its organization; but an organized body that has lost its motion, is truly a body without life, and the body then differs in nothing from a fossil, or any other

other dead matter, for all this assemblage of vessels, so many different organs, and this astonishing structure of parts, are no longer of any use to the animal, and should be regarded as not existing, for without IRRITABILITY there is neither sensation nor life.

PRACTICAL OBSERVATIONS.

SECT. XXXI.

THE BITE OF THE VIPER, AND THE METHOD OF CURE.

FONTANA made more than six thousand experiments upon the poison of the viper; he employed more than four thousand animals, and the conclusion he draws from this enormous number of experiments, is, that this poison does not act on the NERVES, but on the IRRITABLE PRINCIPLE in the moving fibres, through the medium of the *blood*. Hence, in those animals that recover, the parts bitten are usually *paralytic*, but not *insensible*. He observes, that the venom of the viper produces a perfect *gangrene*, and the muscular parts are either *discoloured* or *pale*; and that the *florid colour* of the blood also is wholly *destroyed*.

His experiments are very numerous respecting the antidotes against this poison. After reading two thick volumes of experiments, ingeniously devised, we are at last amply repaid by the account he gives us of the LUNAR CAUSTIC; that is, silver combined with OXYGEN. He had no theory that conducted him to the trial, and therefore cannot be suspected of having any bias on his mind.

He

He mixed equal quantities of LUNAR CAUSTIC with the venom of the viper, adding thereto a few drops of water. I wounded with this mixture, says he, the legs of five small birds, *but none of them died, or seemed affected with the disease of the venom, and there was no gangrene or paralysis produced!*

I tried this mixture on ten other birds, which added to my great astonishment. Still I could not determine as to the unexpected novelty of these favourable consequences; and fearing that accidental circumstances might have prevented the action of the venom, I resolved to make other experiments on the same animals. I wounded the legs of six others, multiplying the incisions, to introduce a good deal of the venom. In these experiments two of the birds actually died, one in the space of six hours, the other in twenty-eight.

On the morrow I repeated this experiment, with the same circumstances, on ten other birds; two *only* of them died, and that at the end of twelve hours.

Fearing that the wounds alone might have brought on death, particularly as they were irritated by the caustic, I tried ten birds, on the legs of which I made wounds as usual, and applied the caustic by itself. One of them died at the end of eight hours. So it seems at least very probable, if not very certain, that the two birds before-

before-mentioned, died likewise of their wounds, and not of the effects of the venom.

The pigeon, next to small birds, particularly if very young, is the animal killed with the smallest quantity of venom. I chose four of these for a trial, and operated on all of them in the same way. I made several transverse wounds with scissars, in the muscles of their legs, and introduced this venomous liquor, mixed with LUNAR CAUSTIC, abundantly into the wounds. *Neither of these pigeons either died, or seemed to have the disease caused by the venom of the viper.* The next day I repeated the experiment on twelve pigeons, the legs of which I wounded in several places, and *neither of them died.* I varied the application of the venomous mixture, which I sometimes forced into the wounds with small bits of wood, sometimes with pieces of stout thread smeared with it. *Neither of them died* in these trials. I proceeded to the muscles of the breast, which I wounded in different ways, and diversified the application of the mixture: but it was in vain that I multiplied my experiments, *neither of the pigeons died!*

It cannot now be doubted, but that the LUNAR CAUSTIC, when mixed with the *venom of the viper*, renders it INNOCENT; and thus every thing concurs to make us regard it as the *true and only specific* against this poison. I can now flatter myself, says FONTANA, with having at length

length discovered a *certain remedy* against the bite of the viper; a remedy that so many people have sought for in vain.

I next proceeded with confidence to try the LUNAR CAUSTIC, after the bite or insertion of the venom had taken place. I wounded the muscles of the legs of four small birds, as birds are the easiest killed by the venom of the viper, and after having made slight scarifications, I applied the *lunar caustic*, washing the wounds soon after. *Neither of them died, nor had the disease of the venom.*

I wounded next four other birds like the preceding ones, in the legs, with venomous teeth, and afterwards washed and scarified the wounds, but did not apply the *lunar caustic*. THEY ALL DIED. I then wounded eighteen birds, scarified the wounds, applied the remedy, and washed them, and THEY ALL RECOVERED!

I proceeded then to try this new remedy on six small Guinea-pigs. To three of them I applied the venom to the muscles of the legs, to the other three to those of the breast, each of which I had previously wounded. I then applied the LUNAR CAUSTIC. *Neither of the Guinea-pigs died.*

I began to vary my experiments. I had six fowls bit in the thigh by as many vipers. Five of them swallowed three tea-spoonfuls each of the solution of the *lunar caustic*; the other did not swallow

swallow any. I applied the *lunar caustic* in the same way to each of their wounds; the last *died*, and the other five who took the solution all *recovered*.

Among the multitude of other experiments, we find but *one other remedy* besides the *lunar caustic*, which was of any material advantage for the bite of the viper, and this serves also to confirm the theory maintained in this part of the work, respecting the power of *oxygen* in overcoming poisons.

I observed, says FONTANA, that dogs and cats recovered in proportion to the violence of their vomiting. I wished to follow the indications of nature. The result of some of these experiments contradicted that of others, but several of them were very favourable and uniform. Amongst a great number of trials, I had, says he, a dozen dogs bit in the leg, each by three vipers, and by each repeatedly. To six I gave EMETIC TARTAR (*antimony combined with oxygen*), and to the other half nothing. All who had the emetic tartar *recovered*: and the others, except two, soon *died*, so that I am inclined to think that emetics* are of service, as seven or eight successive trials had not unfrequently the same successful termination.

* The query is, Whether any other emetic than a *metallic oxyd* would have had this effect?

SECT. XXXII.

POISON OF THE TICUNAS, AND ITS ANTIDOTE.

I HAD intended to have made no mention of poisons which are uncommon, but there is one particular mentioned respecting the vegetable poison, called *ticunas*, with which the American Indians fatalize their arrows, that I cannot help here relating it.

I dissolved, says FONTANA, this deleterious poison in the *three* MINERAL ACIDS, as also in distilled VINEGAR.

I made slight incisions into the skin of a small Guinea-pig, and wet it several times with the solution of the poison in *nitrous acid*. What the animal suffered seemed to result from the wounds and acid alone, for in an hour it became as lively as usual.

Two hours after, I repeated this experiment on another part of the skin prepared in the same way, employing a solution of the poison in *rum*; in less than four minutes the animal *died*.

I then wounded the skin of a small rabbit slightly, and applied to it several drops of a solution of the poison in *oil of vitriol*. The rabbit felt no ill effects from it.

I next prepared as usual the skin of a small rabbit, and wet it with a solution of the poison in the *dephlogisticated marine acid*; and the animal did not suffer from it,

I also

I also made an experiment with the solution of this poison in *vinegar*.

Of six animals treated with the solution in *vinegar*, two died, two had all the symptoms of the disease caused by the poison, and the other two were not affected by it.

In these instances, we cannot suppose, says FONTANA, that the *mineral acids* prevented the effects of the poison of the *ticunas*; or the *lunar caustic* that of the viper; by crisping and hardening the blood-vessels, and thus preventing the poison from insinuating itself this way into the blood, for the *fluid volatile alkali* has no such property, and this must appear to us *strange*, he adds, when we consider the great agreement there is betwixt the FLUID ALKALI and LUNAR CAUSTIC.

Now the dawn of a probable theory has broke in upon us, we are able to distinguish the operation of these two bodies, which destroy *contiguity of parts* in the living body from very different causes. The LUNAR CAUSTIC, as was said before, is *silver* combined with the *nitrous acid*, and that to the *oxygen* of that mineral acid it owed its powers. Now the FLUID VOLATILE ALKALI is *azot* and *hydrogen*, which has the strongest affinity for *fixed air* (*carbon* combined with *oxygen*,) and by dispossessing from animal matter its *carbon* and *oxygen* it acts; for when previously faturated with *fixed air*, it has then no such property, but becomes *mild alkali*.

SECT. XXXIII.

OF THE BITE OF VENOMOUS SERPENTS, AND THE METHOD OF CURE.

I HOPE the reader will forgive me, if I adduce one more instance of a poison to which we are strangers, from the consideration of a specific being discovered, which tends to confirm the general conclusion respecting the power of *oxygen*. Dr. Ruffel, in his account of serpents, assures us, that what is known in the East, by the name of the *snake-pill*, never fails in curing the bites of the most venomous serpents. The *Tanjore*, or *Snake-pill*, consists principally of the OXYD OF MERCURY, and of ARSENIC.

Swarts, a Moravian priest, instigated by the celebrity these had obtained for the bite of the Cobre de Capello, and other Indian serpents, through the noblest motives of philanthropy, purchased the secret from the Brachmins, and communicated it to the Company's surgeons. One of these gave the information to Dr. Ruffel, with an account of several cases, proving their success in such cases,

SECT. XXXIV.

OF CANINE MADNESS.

IN the whole catalogue of diseases, hydrophobia seems the most dreadful. It often attacks in a healthy period of life, and when death appears far off, and leaves the patient until the approach of the disease in a horrid suspense*. In viewing a hydrophobic patient, when labouring under the action of this dreadful poison, the attention is naturally struck with the horrid convulsions which torture the unhappy patient, the difficulty of deglutition, and the wonderful distress which he expresses at the sight of water, though at the same time his thirst be excessive. These, with his ghastly countenance, extreme restlessness, and constant wakefulness, has universally led the practitioner to consider the complaint as purely *nervous*. He flies, therefore, to whatever he presumes may still the action of the nerves. Hence blisters, opiates, assafoetida, camphor, valerian, tonics, and every medicine of which he has either read or heard mentioned for that purpose, are immediately called to his aid. With what success

* John Hunter, though a man of courage, was dissecting a dog, which died of canine madness, and cut himself. He was so alarmed that he dates the origin of his disease of the heart to this cause.—*Vide Home's Life of Hunter*,

may be seen from the wretched detail of cases, as fatal as they are numerous, which the experience of many centuries have recorded. The time indeed for action is short; its longest period little more than a day or two; the disease most rapidly running its course, the symptoms hourly doubling their violence. The late period when the physician is called in, is another reason for so little having been done, for what can be effectually done towards the close of the fatal period? Thus placed, what can he often do, than merely to cast, with the bye-stander, a look of commiseration on the hopeless sufferer, prepare the friends for the approaching catastrophe, or order some medicine, which for the present situation of things, though powerful in itself, he is conscious cannot for a moment arrest the fatal blow.

WE have a very accurate description of the *symptoms* of hydrophobia, or as it is more properly called, rabies contagiosa, by Dr. WOLF, in five cases of persons who died of this dreadful disease. The eye, as in typhus fever, is impatient of the least light; any bright colour creates uneasiness; the mind is very irritable; the best friends are disliked. It is remarkable that the lint, or other dressings, when taken off, discover a *black surface*, even though the wound may discharge good pus; the fauces have *no appearance* of redness; the face, which at first is *pale*, becomes

brown, and during each spasmodic attack turns almost quite *black*; the lips are extremely *livid*; as the disease advances each paroxysm is less violent; the patient has intervals of reason; the dread of strangulation from water goes off; the pulse becomes weak, quick, and fluttering; and the body feels remarkably *cold*; he then composes himself as it were to sleep, and expires. Upon dissection there is not to be found the *least trace of inflammation*.

From this appearance of things, have we not reason to expect some advantage from substances containing OXYGEN? Opium, camphor, musk, and submersion, have from repeated trials justly lost their reputation in this disease*. The abstraction

* These remedies have been employed from considering this disease as purely NERVOUS. Opium in every different preparation yet invented, has been employed. It has been given in moderate, and also in large and powerful doses. Dr. Vaughan gave to one of his patients no less than 57 grains in fourteen hours. John Hunter exhibited it in a case that came under his care with a tolerable free hand, and Dr. Meuse has carried it from 5 to 15 grains; but it failed in every instance, and suspicion may arise whether this disease has not been aggravated by it, and the other antispasmodics. The nature of spasmodic diseases, and the operation of opium, was formerly unknown. Its action on the blood has been before explained in Section XXVIII.

Convulsions appear to arise, says FONTANA, from the destruction at different times, and in an irregular manner, of the *irritability* of the muscular fibres. It has been unjustly attributed to a superabundance of animal spirits. Weak languishing animals, that die from hunger, perish in dreadful convulsions. It

straction of *oxygen* from the system by immoderate exercise,

is besides certain, that men and women of a delicate and weak frame, are always the most subject to convulsions; and it is not possible to suppose in these persons a superabundance of animal spirits.

We know that all the muscles, even in a relaxed state, preserve notwithstanding a *certain tension* of their fibres, which, when they are cut, never fail to contract themselves and enlarge the wound. When a muscle becomes paralytic it lengthens, and its antagonist then contracts the more; which shews that repose of the muscles depends on the equilibrium of strength betwixt the different muscles, and betwixt their different fibres. The powers *thus balanced* destroy and renew themselves at every instant, without producing any motion or sensible change. This *natural tension* of the muscular fibres arises either from the nervous electricity, or from the exact distribution of *well oxygenated blood* through the whole substance of the muscles. If these muscles do not receive the same proportion of *well oxygenated blood*, or if the *arterial blood* be distributed with an unequal quickness and energy amongst them, the *equilibrium* of the mutual efforts of the muscles is immediately destroyed; the strongest of them contract; and hence arise *convulsions* and *agitations* of the whole frame. It is for this reason, that those who die of an hæmorrhage, as well as those who perish by poison, or by breathing mephitic airs, are seized with *convulsions*: for it certainly is not probable that the loss of blood, and of strength, should bear an *equal proportion* in every part, in every muscle, and in every fibre, whilst the *circulation* itself is *unequal*, and the *principle of irritability* is dependent on, or derived from, the *blood*.

Some fresh light, I think, may be thrown on this interesting subject, by comparing the symptoms which arose in the case of that most eminent anatomist John Hunter, which appeared upon dissection (Vide Vol. I. Sect. THE VITALITY OF THE BLOOD, where his death is related) in whom was found an ossification of the valves of the great vessels of the heart. Who in this case would not have affirmed, that the rotatory motion of the room, the false perception of being as it were suspended in

exercise*, is also found to be no remedy, and in dogs it is the symptom of the disorder.

M. MATHEU, after bleeding and purging, excites as soon as possible *salivation*. He says, “ the “ *hydrophobia* yields, as it were, by enchantment, “ when the *salivation* appears; and it must be “ kept up according to the degree of the disease “ and the strength of the patient.” The illu-

air, was referable to the nerves, and to these alone? But the accurate history of this strange complaint, compared with the dissection, clearly shows, that the primary cause was in organic changes in the heart and arteries, preventing the due circulation of the blood. The affections of the nerves was doubtless *secondary*. I throw out this hint merely as expressive of my doubts, whether those men are correct who refer all to the nerves primarily. Pursuing the opinion of the immortal Hunter before referred to, I would say, that all sedative poisons attack the OXYGEN of the blood, the moving fibres are thence affected, the heart is convulsed, the brain is affected, and symptoms called nervous ensue. For the nerves are a part of the system framed from the blood; they grow from this parent source, and whatever be, what is termed the *nervous fluid*, it cannot but be connected with the blood, being constantly expended and renewed, and therefore to be considered only as a branch from the parent stock. Deny, therefore, parts of their due proportion of blood, or encrease the quantity, or let this blood be deficient in its *oxygen*, and the nerves will immediately indicate the change. This doctrine relates then to all other poisons as well as hydrophobia, and it will refer us to the *fluids* as a primary, and to solids (including nerves) only as a secondary cause in tracing this complaint to its *origin*, and establishing a *just pathology*.

* This is recommended by John Hunter, because a man in hydrophobia ran three times round Smithfield, and, exhausted by the fatigue, seemed for awhile relieved! *Aliquando bonus dormitat Homerus*. Vide JOHN HUNTER'S Dissertation on *Hydrophobia*.

trious SAUVAGE, speaking of *Mercury*, declares, “ apres bien de recherches. L’ignore que ce remede ait encore manqué, etant, meme appliqué quand le rage étoit déclarée.” “ After many enquiries, I know not,” says SAUVAGE, “ whether *mercury* has ever failed, even when the hydrophobia had commenced.”

It may be said by some, that the *oxyd of mercury* has been administered in this disease, and without advantage; but as far as I have read, it has been constantly in such cases, accompanied with musk, bleeding, opium, or camphor. But whether in this alarming disorder it be better to oxygenate the blood or not when the disease has taken place, as *prevention* is always better than *cure*, it should occupy most of our attention.

When the contagion of a putrid fever is taken by the saliva into the stomach and bowels, which is its constant road, if the patient, the moment he finds himself attacked with a sense of chilliness, loss of appetite, and an unpleasant taste in his mouth, has recourse to two emetics at proper intervals, and after the operation of the first emetic, takes a cathartic, he has certainly got rid of the infection: in the same way, even after three days, or perhaps a week, if the part bitten by the dog be cut out with the knife, even after a few days, the danger is escaped.

Vinegar has of late been recommended as a specific. Dr. Moreta, physician to the King of Poland,

Poland, is among the number who extols its virtue. He asserts his having prevented the disease in more than *sixty* cases, when used immediately after the bite, and for nine succeeding days as an external application to the wound. Whilst this process is carried on, an ounce and a half at a dose is frequently to be administered internally; and this is to be continued until the 15th day, not thinking it necessary, however, to keep the wounds open longer than the 9th day. The *hydrophobia* itself, he assures us, has been stopt at its commencement by the same means. Did experience in the hands of other men furnish similar events, the discovery would be as valuable as the method is simple.

A mad sow is said to have been cured by this remedy. The creature was seized, we are told, with the disease on the 6th day after the bite. Being shut up immediately on being bitten, an opportunity was afforded for observation. The first symptom was refusal to eat. She stood for three days with her head leaning on her food, without eating it. M. Beudon directed four pots of strong warm vinegar to be let down through a hole in the stable where the creature stood; then stopped up the hole to prevent communication with the external air. About an hour after she was observed to drink the vinegar with the greatest avidity. This induced him to put a quantity of bran, moistened with vinegar, into her trough;

trough; it was all consumed by the following day. The plan was pursued, and the animal, it is said, recovered. Two dogs bitten with the fow were cured by the same means*.

Should the principle of acidity be considered as the useful part, and alone containing the virtues of the medicine, the cohesion of combination between it and the substance in union with it, is to be taken into consideration. The more loose the combination, the more easy will the separation become, to afford it an opportunity of a new combination with the frame.

If an acid composition be thought useful, I should be inclined to prefer the oxalic to the acetous.

Sugar is composed of carbon and hydrogen in conjunction with oxygen†. By the addition of nitrous acid to sugar, we can separate its *acid* in form of *pure crystals*, and are enabled by this process to supersaturate sugar with *oxygen*, and in this way obtain a larger quantity of it in a given bulk, and in a looser bond of union; a consideration of consequence in a disease where deglutition is so difficult.

Arsenic is another remedy which deserves particularly to be tried. We are assured by the same surgeon who gave the communication of the

* Vide Ferriar's excellent Histories and Reflections.

† See Cruikshank's excellent account of the formation of sugar, in Dr. Rollo's work on Diabetes.

snake-pill to Dr. Ruffel, that he tried these pills, whose efficacy we before proved to depend principally in arsenic, in no fewer than fourteen different persons bitten by mad dogs, with perfect success; and with no other unpleasant symptoms than purging in most, and a slight vomiting in a few.

Lunar caustic, the specific against the bite of the viper, both as an external application, and an internal remedy, in such a disease deserves to be tried,

Added to these, I would recommend the inhalation of *superoxygenated air*. In a disease so short in its fatal termination, every moment is of consequence. If this air can more immediately reach the blood, and restore to the system the *oxygen* which is destroyed by the action of the poison, it will be one of the most valuable acquisitions to the *Materia Medica*.

Thus have I assembled a few facts towards a conjecture on the probable good effects of *oxygen* as the antidote of this poison. I grant that yet more facts are wanting to ascertain this point, which is founded upon the supposition that the hydrophobic virus enters the system, and by a certain *modus operandi* on the blood, creates a certain set of actions, inducing changes, of which *the abstraction of oxygen* may form the principle.

SECT. XXXV.

THE HOOPING COUGH.

THIS disease, so well known by the peculiar sound of the cough, incidental to the human race but once, is a poison whose nature is but very little known. The clear air of the country, is the remedy usually resorted to. The inhalation of *oxygen air* was tried with success in some instances by Dr. Thornton, after the exhibition of a vomit. Accident has, however, brought to light the power of *arsenic* over this disease. The *white drop*, so famous for the cure of the ague (which fever is probably derived from the operation of the poison of marshes, or marsh miasmata) being taken by children who laboured under both these disorders, were very soon recovered from both, and restored to health *. The trial, however, of this mineral must be made with extreme caution, for in injudicious hands the remedy would be generally found to be more fatal than the disease in question.

* This circumstance was related to the author by Mr. Corp, an eminent surgeon of Barnet.

SECT. XXXVI.

THE SMALL-POX.

THIS is another poison, which is peculiar to the human race, and exerts its influence but once in the body*. Nor does our wonder at the ordinance of God cease here, (for HE equally appears in the thunder and the tempest, as in the serenity of spring, which resembles our states of disease and health); for as the blood is converted into callous for bones, when wanted, into muscular fibre, into nerve, which is by the process of *assimilation*, so the minutest particle acts throughout

* Great advantage has been lately taken of this striking phenomenon. There is a disorder not unfrequent among cows, called the Cow-Pox, from its producing pustules. When the matter of the sores about the teat of the cows labouring under this disease gets applied to any part of the human body, an ephemeral fever, after a certain period, ensues, and the patient is ever after rendered *insusceptible*, like animals, or those who have had the small-pox, of that dreadful scourge of humanity. The Cow-pox, however, may be caught several times. This disorder had existed unnoticed by practitioners for time immemorial, until the attention of the faculty was called to it by Dr. JENNER, and the truth of this circumstance put beyond a question; and it is probable that the ravages of the small-pox will be in future prevented by the general inoculation of the Cow-Pox, as soon as truth shall have conquered opposition.

the

the frame, after which matter of a similar nature is engendered in the whole body. In the natural way the quantity of this poison is greater than from inoculation, hence the advantage of raising this disease artificially. The secondary fever is also common to the natural small-pox, and attended with great danger, from the absorption of the new-formed variolous matter; and the throat is frequently affected, and goes into gangrene. This affection of the throat, in the natural small-pox, is supposed, by Dr. Darwin, to arise from variolous matter imbibed and adhering to these parts. On the contrary, the celebrated Sutton thinks, that the whole difference between the natural and inoculated small-pox, arises from the different states of the body for the reception of this disease: But facts daily contradict this supposition, where, without preparation, the inoculated go through this disease generally well, few, if any, dying from it*.

* Vide the following Sections,

SECT. XXXVII.

THE ANTIQUITY OF INOCULATION.

By what means the inoculation of the Small-pox was first discovered, or at what time and place it was first used, we are totally ignorant. It may be inferred, therefore, that the art of *inoculation*, which is capable of saving more lives than the whole *Materia Medica*, was originally a fortuitous discovery: and I may add, that to the dishonour of the medical profession, it was for a long time under the management of old women, and ignorant persons, in *this* and *many other countries*, before it was patronized and adopted by the legitimate practitioners of medicine.

Inoculation was certainly first introduced into *Constantinople* from *Georgia* *; but as this event did not take place till towards the end of the last century, we may conclude, that had the art been practised for many ages at so short a distance from that metropolis, it would have been known there much sooner. Besides, in various countries, very remote from the Caspian sea, it is proved to have been an immemorial usage,

* It is generally thought that the Circassians first inoculated their children in order to rear them as slaves for the Turkish Seraglio. Vide page 171 in this volume.

Inoculation was introduced into *London* as an *invention wholly foreign*, and from its success upon the younger branches of the royal family, in 1722, became the subject of public conversation, when, to the great surprise of the learned, several communications to the Royal Society proved that it was already a practice known in *South Wales*, where it had existed under the denomination of *buying the small-pox*, as far back as tradition could be traced.—That this *Cambrian* mode of buying the small-pox was in effect the same as the *Byzantine inoculation*, then just adopted in England, the letters of Dr. Williams, Mr. Owen, and Mr. Wright *, bear ample testimony. The last-mentioned gentleman writes to Mr. Bevan as follows:

“ I received yours the 9th inst. and, in answer
 “ to it, will readily give you all the satisfaction
 “ I can in relation to a very ancient custom in
 “ this country, commonly called *buying the small-*
 “ *pox*; which, upon strict inquiry since I had
 “ your letter, I find to be a *common practice*, and of
 “ a *very long standing*, being assured by persons
 “ of unquestionable veracity, and of advanced
 “ age, that they have had the small-pox com-
 “ municated to themselves in this way, when
 “ about sixteen or seventeen years of age: they
 “ then being very capable of distinguishing that

* These letters may be seen in the Philosophical Transactions for the year 1722; and in Dr. Jurin's account of the success of Inoculation in 1723.

“ distemper from any other, and that they have
 “ parted with the matter contained in the pustules to others, producing the same effects.

“ There are two large villages in this county,
 “ near the harbour of Milford, more famous for
 “ this custom than any other, namely, ST.
 “ ISHMAEL’S and MARLOES. The old inhabitants of these villages say, that it has been a
 “ common practice with them *time out of mind*; and
 “ what was more remarkable, one W. Allen, of
 “ St. Ishmael’s, *ninety* years of age, who died
 “ about six months ago, declared to some persons
 “ of good sense and integrity, that this practice
 “ was used all his time, and that he got the
 “ small-pox that way. These, together with
 “ many other informations I have met with,
 “ from all parts of the country, confirm me in
 “ the belief of its being a very *ancient practice*
 “ among the common people; and to prove that
 “ this method is still continued among us, I will
 “ give you the relation of an elderly woman, a
 “ midwife (who accidentally came into company
 “ when your letter was reading,) whose name is
 “ Joan Jones, aged *seventy* years, of good credit,
 “ and perfect memory. . She solemnly declares,
 “ that about fifty-four years ago, having the
 “ small-pox, one Margaret Brown, then about
 “ twelve or thirteen years of age, bought the
 “ small-pox of her; and she further says, that
 “ she has known this way of procuring the small-
 “ pox

“ pox practised from time to time above *fifty*
 “ *years* ; that it had been lately used in her neigh-
 “ bourhood ; and she knows but of *one* dying of
 “ the said distemper when communicated after
 “ the method aforesaid, which accident hap-
 “ pened within these two last years.”

The manner of *inoculating*, or *buying the small-pox*, here alluded to, was not always the same, but was varied by different persons. Dr. Williams says, “ They either rub the matter, taken
 “ from the pustules when ripe, on several parts
 “ of the skin of the arms, &c. or prick those parts
 “ with pins, or the like, being first infected with
 “ the inoculating matter.” Mr. Owen, and five of his school-fellows, “ scraped the skin with a knife
 “ until the blood began to flow, before they
 “ applied the variolous pus.” Others produced the distemper, “ by holding a certain number
 “ of dried pustules for a considerable time in the
 “ palm of the hand.”

We are also informed, that the inhabitants of the *Highlands of Scotland* *, for *many ages*, have had recourse to a species of *inoculation*, performed by tying worsted threads, moistened with variolous matter, round the wrists of their children.

This vulgar or domestic custom of inoculating the small-pox, likewise prevailed in many other parts of *Europe*, and in various countries of *Asia* and *Africa* ; and, what is highly curious, in several of these distant nations, the practice was, as in

* See Monro on Inoculation in Scotland.

Wales, termed **BUYING THE SMALL-POX**. For it was superstitiously imagined, that inoculation would not produce the proper effect unless the person, from whom the variolous matter was taken, received a piece of money, or some other article in exchange for it, from those whom it was intended to infect.

At *Naples*, *Monf. de la Condamine*, in 1769, learned that *inoculation* had been secretly used by the people there from *time immemorial*: and the celebrated *P. Boscowich* assured him it was practised in the same manner at *Pavia*, where the nurses often inoculated, without the parents knowledge, the infants entrusted to their care. For this purpose they commonly rubbed the palm of the hand of the child with fluid variolous matter, recently taken from a pustule.

The practice of *buying* or *inoculating* the small-pox prevailed also in *some of the provinces* of France, especially in *Auvergne* and in *Perigord*; and still more generally among the ignorant peasantry in many parts of *Germany**, *Denmark*, and *Sweden*†.

In

* See *Condamine*, *l. c.* He also says, Ce n'est pas seulement dans le Duché de Cleves & dans le comté de Mœurs, où le Docteur Schwenke trouva cet usage établi en 1713: il y a près d'un siècle qu'on le connoissoit en Dannemarck, puisque *Bartolin* en fait mention dans une lettre sur la transplantation des maladies, imprimée à Copenhague en 1637.

Le Docteur *Carburi*, premiere professeur de médecine en l'université de Turin, natif de Céphalonie, m'a dit en 1756, que l'inoculation étoit en usage dans cette Isle avant l'an 1537.

† See Professor *Murray's Historia infitionis variolarum in Suecia*,

In the *northern parts of Europe* this practice seems to have been less complete * than that adopted on the southern and eastern coasts of the *Mediterranean Sea*. For in *Barbary* and in the *Levant*, though they placed implicit confidence in the efficacy of *buying* or purchasing the various pustules; yet their method of performing the operation was such as could not fail of producing the inoculated small-pox. *The infectious matter was inserted at a small opening made in the fleshy part of the hand, between the thumb and fore-finger; and, according to Dr. Shaw, "the person who is to*
" undergo the operation, receives the infection
" from some friend or neighbour, who has a
" favourable kind, and who is entreated to sell
" two or three of his pustules, for the same num-
" ber of nuts, comfits, or such like trifles."

This account of inoculation differs not materially from that practised in the kingdoms of *Tripoli, Tunis, and Algier*, as related by his excellency Cassim Aga, in 1728 †, when ambassador to our court. He says, "If any one has a mind to
 " have his children inoculated, he carries them

Suecia, p. 96. Schultz's Account of Inoculation, 65. Ephem. Germ. An. 2. A. D. 1671. Obs. 165. Also An. 8. Anni 1677. Obs. 15. Werlhof, Disq. de variolis et anthracibus, p. 19.

* Vide Roeder. *Diff. utrum naturalibus præsent variolæ artificiales*, p. 34.

† See Scheuchzer's Account of the Success of inoculating the Small-pox in Great Britain, for the years 1727 and 1728, p. 61.

“ to one that lies ill of the small-pox, at the time
 “ when the pustules are come to full maturity.
 “ Then the father makes an incision on the
 “ back of the hand, between the thumb and
 “ fore-finger, and puts a little of the matter,
 “ squeezed out of the largest and fullest pustules,
 “ into the wound. This done, the child’s hand
 “ is wrapped up in a handkerchief, to keep it
 “ from the air, and he is left to his liberty, till
 “ the fever arising confines him to his bed, which
 “ commonly happens at the end of a few days.
 “ This practice is so innocent, and so sure, that
 “ out of 100 persons inoculated not *two* die;
 “ whereas, on the contrary, out of 100 persons
 “ that are infected with the natural small-pox,
 “ there die commonly about *thirty*. Inoculation
 “ is so *ancient* in the kingdoms of *Tripoli*, *Tunis*,
 “ and *Algier*, that nobody remembers its first rise;
 “ and it is not only practised by the inhabitants
 “ of the towns, but also by the *wild* Arabs.”

That this practice is very common with the
 Arabs, and is by them also called *buying the small-*
pox, fully appears from Dr. Russell’s communica-
 tion to the Royal Society*. About the year
 1758, while this ingenious physician was on a
 visit at a Turkish Harem, a lady happened to
 express much anxiety for an only child who had
 not had the small-pox; the distemper at that

* An Account of Inoculation in Arabia, in a letter from
 Dr. Patrick Russell. Phil. Trans. vol. 56. p. 140.

time being frequent in the city. None of the ladies in the company had ever heard of *inoculation*, so that the Doctor having once mentioned it, was obliged to enter into a detail of the operation, and the peculiar advantages attending it. Among the female servants in the chamber, was an old Bedouin *Arab*, who having heard the Doctor with great attention, assured the ladies, “ that the account given by the Doctor was “ upon the whole a just one; only that he did “ not seem well to understand the way of per- “ forming the operation, which she asserted “ should not be done with a lancet but with a “ needle * :” she added, “ that she herself had “ received the disease in that manner when a “ child, and *had inoculated many*; that the whole “ art was well known to the *Arabs*, and that “ they termed it *buying the small-pox*.” In consequence of this hint, Dr. Russell made further inquiries, by which he discovered, “ that inocu- “ lation had been of long standing among them. “ They, indeed, did not pretend to assign any “ period to its origin; but persons seventy years “ old and upwards, remembered to have heard “ it spoken of as a *common custom* of their ancestors, and they believed it to be of as *ancient a “ date as the disease itself*.”

* Niebuhr has since told us, that the Bedouin women inoculate their children, “ avec une epine, faite de meilleur instrument.”—*Descr. de L'Arabie*. p. 123.

Dr. Russell was likewise assured, " that inoculation was equally common among the *eastern* " *Arabs*, being practised not only at *Bagdad* and " *Mosul*, but also at *Bassora*; and that at *Mosul* " particularly, when the small-pox first appeared " in any district of the city, it was a custom some- " times to give notice by a public cryer, in order " that those who were so inclined might take the " opportunity to have their children *inoculated*."

" In *Armenia*," Dr. Russell says, " the Turko- " man tribes, as well as the Armenian Christians, " have practised inoculation *since the memory of* " *man*; but, like the Arabs, are able to give no " account of its *first introduction* among them. " At *Damascus*, and all along the coast of *Syria* " and *Palestine*, inoculation has been long known. " In the *Castravan* mountains it is adopted by the " *Drusi* as well as the Christians. Whether the " Arabs of the desert to the south of *Damascus*, " are acquainted with this manner of commu- " nicating the small-pox, I have not," says this physician, " hitherto been able to learn; but a " native of *Mecca*, whom I had occasion to con- " verse with, assured me that he himself had been " inoculated in that city."

From the various accounts of *inoculation* here related, it is *highly curious* that in so many *distant nations*, differing widely in manners, customs, laws, habits, and religion, this art should be generally known by the name of "BUYING THE

" SMALL-

"SMALL-POX." It is also to be considered as a remarkable proof of its *great antiquity*, that the less civilized part of mankind, or people of the most simple and uniform habits, have retained this custom the longest.

Having before related Cassim Aga's account of inoculation in *Tripoli*, *Tunis*, and *Algiers*, I think it proper to add, that there are likewise proofs of its long usage in *Senegal*; and that the negroes in the interior parts of *Africa*, whenever the small-pox threatens to invade them, have recourse to *inoculation*, performing the operation in the arm, and obliging the patients to abstain from animal food, and suffering them to drink nothing but water, ACIDULATED with the JUICE OF LIMES *.

In *Hindustan* this practice should seem to be a more ancient custom than in *China*; for D'Entrecolles, by obtaining access to several medical books at *Pekin*, discovered that one of them gave some account of the introduction of inoculation into *China*, and stated that in this empire it had first to encounter strong opposition. The author of the book here alluded to, lived in the latter part of the dynasty of *Ming*; hence it may be concluded, that inoculation in *China* has not yet

* See the Letter of C. Colden, Esq. to Dr. J. Fothergill in *Med. Obs. and Inq.* vol. i. p. 227. Also the "Narrative of the Method of Success of Inoculation in New England," by D. Neal, p. 24.

been practised two hundred years * ; whereas, in *Hindustan*, from tradition, it seems to have been an immemorial custom ; and the methods of practising this art by the Chinese and Hindoos are so widely different as clearly to shew that they could not be derived from the same origin.

The *Chinese*, in order to inoculate, take from two to four dried variolous pustules or scales (according to their size), between which they place a small portion of musk ; the whole is then wrapped up in cotton, and inserted within the nostril of the patient. If the child undergoing the operation be a male, this infectious tent is introduced into the left, but if a girl, into the right nostril. The scales, thus used, are to be kept in a close jar for several years. When the Chinese are obliged to use recent pustules, they think it necessary to correct the acrimony of the matter, by exposing it to the steam of an infusion of the roots of scorzonera and liquorice. They sometimes reduce the dried scales into powder, and form them into a paste, for the purpose of inoculation.

On the contrary, inoculation, as practised in *Hindustan* by the Bramins, very rarely fails of producing the distemper in the most favourable way : I shall therefore circumstantially relate the whole process in the words of Mr. Holwell †. “ Inocu-

* D'Entrecolles, l. c. p. 10.

† See *An Account of the Manner of inoculating the Small-pox in the East Indies*.

" lation is performed in Hindostan by a particu-
 " lar tribe of Bramins, who are delegated annu-
 " ally for this service from the different colleges
 " of Bindoobund, Eleabas, Banaras, &c. over
 " all the distant provinces; dividing themselves
 " into small parties of three or four each; they
 " plan their travelling circuits in such wise as to
 " arrive at the places of their respective destina-
 " tion some weeks before the usual return of the
 " disease; they arrive commonly in the Bengal
 " provinces early in February; although, in some
 " years, they do not begin to inoculate before
 " March, deferring it until they consider the state
 " of the season, and acquire information of the
 " state of the distemper. The inhabitants of
 " Bengal, knowing the usual time when the
 " inoculating Bramins annually return, observe
 " strictly the regimen enjoined; this preparation
 " consists only in abstaining for a month from
 " fish, milk, and gee (a kind of butter made
 " generally of buffalo's milk:) the prohibition
 " of fish respects only the native Portuguese and
 " Mahomedans, who abound in every province
 " of the empire. When the Bramins begin to
 " inoculate, they pass from house to house, and
 " operate at the door, refusing to inoculate any
 " who have not, on a strict scrutiny, duly ob-
 " served the preparatory course enjoined them.
 " They inoculate indifferently on any part; but
 " if left to their choice, they prefer the outside
 " of

“ of the arm, midway between the wrist and the
 “ elbow, and the shoulders for the females.
 “ Previous to the operation, the operator takes a
 “ piece of cloth in his hand, and with it gives a
 “ *dry friction* upon the part intended for inocula-
 “ tion, for the space of eight or ten minutes* ;
 “ then, with a small instrument he wounds, by
 “ many slight touches, about the compass of a
 “ silver groat, just making the small appearance
 “ of blood ; then opening a linen double rag
 “ (which he always keeps in a cloth round his
 “ waist,) takes from thence a small pledget of
 “ cotton, charged with the variolous matter,
 “ which he moistens with two or three drops of
 “ the Ganges water, and applies it to the wound,
 “ fixing it on with a slight bandage, and order-
 “ ing it to remain on for six hours without being
 “ moved ; then the bandage to be taken off, and
 “ the pledget to remain until it falls off itself.
 “ The cotton, which he preserves in a double
 “ callico rag, is saturated with matter from the
 “ inoculated pustules of the preceding year ;
 “ for they never inoculate with fresh matter, nor
 “ with matter from the disease caught in the
 “ natural way †, however distinct and mild the
 “ species. Early in the morning succeeding the
 “ operation, four collons (an earthen pot con-

* This promotes absorption.

† Is this a popular prejudice, or is there any truth in the difference of matter ? It is generally supposed *here* that fresh matter produces the mildest disease.

“ taining

“ taining about two gallons) of *cold water*, are
 “ ordered to be thrown over the patient from
 “ the head downwards, and to be repeated every
 “ morning and evening until the fever comes on,
 “ which usually is about the close of the sixth
 “ day from the inoculation; then to desist until
 “ the appearance of the eruption (about three
 “ days,) and then to pursue the *cold bathing* *,
 “ as before, through the course of the disease,
 “ and until the scabs of the pustules drop off.
 “ They are ordered to *open* all the pustules with
 “ a fine sharp pointed thorn as soon as they
 “ begin to change their colour, and whilst the
 “ matter continues in a fluid state †. *Confine-*
 “ *ment to the house is absolutely forbid, and the*
 “ *inoculated are ordered to be exposed to every air that*
 “ *blows ‡, and when the fever comes on, to be laid*
 “ *upon a mat at the door*; but in fact the eruptive
 “ fever is generally so inconsiderable and trifling
 “ as very seldom to require this last order. Their
 “ regimen is ordered to consist of all the refri-
 “ gerating things the climate and season pro-
 “ duces, as plaintains, sugar-canes, water-melons,
 “ rice, gruel made of white poppy seeds, and

* This practice has been lately introduced in the putrid fever by Dr. Currie of Liverpool, and the rationale of its operation will be therefore examined in another place.

† This is an excellent practice, and greatly assists nature.

‡ This is the late well-known improvement introduced by the Sutton's in this country. Its rationale will be afterwards explained when considering his practice.

“ cold

“ cold water, or thin rice gruel, for their ordinary
 “ drink. These instructions being given, and
 “ an injunction laid on the patients to make a
 “ thanksgiving *poojah*, or offering, to the goddesses:
 “ on their recovery, the operator takes his fee,
 “ which from the poor is a *pund of cowries*, equal
 “ to about one penny sterling, and goes on to
 “ another door, down one side of the street, and
 “ up on the other, and is thus employed from
 “ morning till night, inoculating sometimes eight
 “ or ten in a house.”

*This, and indeed all the preceding accounts of
 inoculation, as anciently practised in different countries,
 were not known in London till after this art had been
 regularly adopted in England*.*

* The above account is extracted from *The History of
 Inoculation*, by Dr. Woodville, physician to the Small Pox
 Hospital, a work which reflects the highest honour on the
 author for his great candour and able researches.

SECT. XXXVIII.

ON THE INTRODUCTION OF INOCULATION IN
ENGLAND.

It is a well known fact, although it must stagger the belief of most fathers and mothers, that there exists a class of people in Georgia, who regularly train up their daughters for sale and prostitution. Forming the *speculation*, if their child has a fine form, and fair complexion, they educate her for the market; but frequently, when they had expended much money, they were disappointed in their sordid views by the attack of the small-pox, when all the education received was then thrown away. Such were the considerations which first induced the natives of Georgia to inoculate, and the first intimation of this practice was derived to the Turks by the fair Circassians, as these slaves were called.

But it was immediately from *Constantinople* that the English first derived a competent knowledge of the advantages of *inoculation*; and to shew in what shape, and what grounds, the practice of it came originally recommended to this country, I shall transcribe a letter written by LADY MARY WORTLEY MONTAGUE:

“ The Small-pox,” says this lady in her natural easy style, “ which is so fatal and so general
“ amongst

“ amongst us, it here entirely harmless, by the
 “ invention of *ingrafting*, which is the term they
 “ give it. There is a set of old women who make
 “ it their business to perform the operation every
 “ autumn here, in the month of September.
 “ When the great heat is abated, people send to
 “ one another to know if any of their family has a
 “ mind to have the Small-pox; they make *parties*
 “ for this purpose, and when they are met (com-
 “ monly fifteen or sixteen together,) the old woman
 “ comes with a nut-shell-full of the matter of the
 “ best sort of Small-pox, and asks where they please
 “ to be inoculated. She immediately pierces that
 “ you offer to her with a large needle (which
 “ gives you no more pain than a common scratch)
 “ and puts into the part as much matter as can
 “ lie upon the head of her needle, and after that
 “ binds up the little wound with a hollow bit of
 “ shell; and in this manner makes four or five in-
 “ cisions. The Grecians have commonly the su-
 “ perstition of making a scratch in the middle of
 “ the forehead, one in each arm, and one in the
 “ breast, to make the sign of the cross; but this
 “ has no very ill effect, all those wounds seldom
 “ leaving scars, and is not done by those who
 “ are not superstitious, who choose to have them
 “ in the leg or that part of the arm that is
 “ concealed. The children, or young patients,
 “ play together all the rest of the day, and are in
 “ perfect health to the eighth. Then the fever
 “ begins

“ begins to seize them, and they keep their beds
 “ two days, very seldom three. They have very
 “ rarely above twenty or thirty in their faces,
 “ which never mark, and in eight days time they
 “ are as well as before their illness. Every year
 “ *thousands* undergo this operation; and the French
 “ ambassador says, pleasantly, that they take the
 “ Small-pox here by way of diversion. *There is no*
 “ *example of any one that has died in it; and you*
 “ *may believe I am well satisfied of the safety of this*
 “ *experiment, since I intend to try it on my dear little*
 “ *son. I am patriot enough to take pains to bring this*
 “ *useful invention into fashion in England; and I*
 “ *should not fail to write to some of our doctors very*
 “ *particularly about it, if I knew any of them that I*
 “ *thought had virtue enough in them to destroy such a*
 “ *considerable branch of their revenue, for the good of*
 “ *mankind.—Perhaps, if I live to return, I may,*
 “ *however, have courage to WAR with them.*”

This communication, stating the advantages of
 inoculation upon indubitable authority, as well as
 similar accounts of the success of this new practice,
 orally given by merchants and others, who, from
 business or pleasure had visited the Ottoman me-
 tropolis, could not fail greatly to interest many in
 this country. Indeed, any scheme much less
 plausible than the present, which promised to dis-
 arm of its terrors so universal and destructive a
 distemper as the Small-pox, must have had a
 strong claim to the attention and patronage of
 any

any nation. Among the English, therefore, whose fondness for novelties is proverbial, it is *somewhat surprising that inoculation was not attempted before the year 1721.*

Mr. MAITLAND, Surgeon to the Honourable Wortley Montague in his diplomatic character at the Ottoman court, informs us, that the ambassador's lady, being convinced of the advantages of inoculation, was determined that her only son, then six years of age, should undergo the operation. For this purpose she desired Mr. Maitland to procure the variolous matter from a proper subject, which being done, an old Greek woman, many years in the constant habit of inoculating, was employed to insert it. "But," says Mr. M. "the good woman went to work so awkwardly, "and by the shaking of her hand put the child "to so much torture with her blunt and rusty "needle, that I pitied his cries, and therefore "inoculated the other arm with my own instrument, and with so little pain to him, that he "did not in the least complain of it*." The consequent disease was very mild, there being only about fifty pustules; and it may be remarked, that this inoculation, which was performed at Pera, near Constantinople, in the month of March, 1717 (if the mode of buying the Small-pox be

* Mr. Maitland's Account of Inoculating the Small-pox, page 7.

excepted) was the first ever practised upon any *English subject*.

Having now stated all the principal facts which immediately led to the establishment of the Byzantine method of practice in this country, I proceed to relate the progress of Inoculation under the conduct of men educated in the medical profession.

Inoculation of the Small-pox was first *regularly* adopted in England in the month of April, 1721; and it was owing to the enlightened and philosophic mind of Lady Mary Wortley Montague, that Great Britain had the honour of adopting this practice the first among the nations of Europe. For after this celebrated lady had witnessed the good effects of inoculation upon her son at Pera, she determined also to try it upon her daughter*, then an infant of three months old. The particulars of the case are stated by Mr. Maitland in the following manner:—" This noble lady sent for
 " me last April, and when I came, she told me she
 " was now resolved to have her daughter inocu-
 " lated, and desired me to find out matter for
 " that purpose. I pleaded for the delay of a week
 " or two, the weather being then cold and wet;
 " for indeed I was unwilling to venture on an
 " experiment altogether new and uncommon in

* She was afterwards married to the Earl of Bute in 1736, and died in her 77th year, November 5th, 1794.

“ England, in a cold season: though I am now
 “ convinced it may with due care be practised at
 “ all times and seasons, but still with more safety
 “ in the temperate and favourable. I also pray’d,
 “ that any two physicians, whom they thought
 “ fit, might be called in, not only to consult the
 “ health and safety of the child, but likewise to
 “ be eye-witnesses of the practice, and contribute
 “ to the credit and reputation of it. In the
 “ meantime, having found proper matter, I en-
 “ grafted it in both arms; the child was neither
 “ blooded nor purged before, nor indeed was it
 “ necessary, considering the very cool regular
 “ diet she had ever been kept to from her infan-
 “ cy. She continued easy and well, without any
 “ sensible alteration, bating the usual little spots
 “ and flushings, till the tenth night; when she was
 “ observed to be a little hot and feverish. An
 “ old apothecary in the neighbourhood being
 “ then called, prudently advised not to give the
 “ child any medicine, assuring them there was
 “ no danger, and that the heat would quickly
 “ abate, which accordingly it did; and the Small-
 “ pox began to appear the next morning. Three
 “ learned physicians of the College were admit-
 “ ted, one after another, to visit the young lady;
 “ they are all gentlemen of honour, and will, on
 “ all occasions declare, as they have hitherto
 “ done, *that they saw Miss Wortley playing about*
 “ *the room, cheerful and well, with the Small-pox*
 “ *raised*

“ raised upon her; and that in a few days after she perfectly recovered of them. Several ladies and other persons of distinction, visited also this young patient, and can attest the truth of this fact.”

The very favourable event of this first trial of the Byzantine mode of inoculation in Britain, and also that of a second made on the son of Dr. Keith*, which immediately followed, was soon generally known in London, and consequently communicated to the different parts of the kingdom. *For an art so new and interesting to the public, could not fail to excite the attention of people of all ranks, and more especially those of the medical profession, on whose concurrent opinions the establishment of this foreign practice here was ultimately to depend.*

However, though these prosperous instances of inoculation had hitherto confirmed the reports of its success at Constantinople; and though the practice had been introduced among the English by a woman who, from her brilliant accomplishments, masculine understanding, and great influence in the fashionable circles, was, above all

* See Sir Hans Sloane's MSS. preserved in the British Museum.—Also Dr. Douglass's Essay on the Small-pox, p. 67.

Mr. Maitland does not mention the name; but says, on the 11th May he inoculated the son of one of the learned physicians who visited Miss Wortley. Condamine Kirkpatrick, and succeeding writers, have fallen into the mistake of stating Sir John Shadwell's son as the second person inoculated by Mr. M.

others, most likely to be followed as an example in the metropolis; yet this valuable art was still regarded with a suspicious caution, and several months elapsed before a *third trial* of it was made in London.

Even *four months* after the inoculation of Miss Wortley, this practice was still viewed in such a dubious light, that it was determined that several culprits, then in Newgate, who had forfeited their lives to the laws of their country, should, on submitting to be inoculated, receive full pardon by the royal prerogative: a proposition which is said by some to have been suggested by the College of Physicians to their Royal Highnesses the Prince and Princess of Wales; but Sir Hans Sloane states it to have wholly originated with the *Princess of Wales*. Mr. Maitland was accordingly requested to perform the operation, which he declined; but lest the opportunity should be lost, Sir Hans wrote to Dr. TERRY, at Enfield, who had practised physic in Turkey, to know his opinion concerning inoculation. The Doctor replied, that he had seen the practice there among the Greeks encouraged by the patriarchs, and that not *one in eight hundred* had died in consequence of the operation. Upon which inoculation was performed upon the following six criminals at Newgate, on the ninth day of August, 1721, in the presence of several eminent physicians and surgeons.

Mary NORTH	36 years old
Ann TOMPION	25
Elizabeth HARRISON . . .	19
John CAWTHERY	25
John ALCOCK	20
Richard EVANS	19

All these six, who were inoculated by making incisions in both arms, and on the right leg, obtained a remission of the sentence of the law on very easy terms; for in ALCOCK, on whom the operation produced the greatest crop of pustules, the number did not exceed *sixty*; and EVANS, having had the Small-pox the preceding year, of course did not receive the disease a second time.

These experiments, no doubt, tended much to the encouragement of inoculation, which in so many instances had now fully answered the utmost expectations of its patrons. The trials of it, however, were yet considered by the faculty as still *too few* to ascertain the general safety and advantage of the practice.

Early in the spring of the year 1722, inoculation began to be adopted in various parts of England; and by order of her Royal Highness the *Princess of Wales*, it was practised first upon *six*; and afterwards upon *five, charity children*, belonging to the parish of Saint James's. The success with which these trials were attended, induced her Royal Highness to cause Princess

AMELIA and Princess CAROLINA to be inoculated on the 19th of April, 1722*; the former being then *eleven* and the latter *nine* years of age. They were inoculated by Serjeant Surgeon Amyand, under the direction of Sir Hans Sloane: but before her Royal Highness determined upon the inoculation of the *Princesses*, she consulted Sir Hans respecting the propriety and safety of the measure. He “told her Royal Highness, that
 “by what appeared in the several essays, it seem-
 “ed to be a method to secure people from the
 “great dangers attending the Small-pox in the
 “*natural way*. That the preparations by diet,
 “and necessary precautions taken, made that
 “practice very desirable; but that not being cer-
 “tain of the *consequences* which might happen,
 “he would not persuade nor advise the making
 “trials upon patients of such importance to the
 “public.” The Princess then asked him if he would *dissuade her from it*: to which he answered, he would not in a matter *so likely to be of such advantage*. Her reply was, that she was *then resolved it should be done*; and ordered Sir Hans to go to the King (George the First) who had commanded the Doctor to wait on him upon the occasion, and it being agreed upon between his Majesty and Sir Hans, the two Princesses were inoculated†.

* See Historical Register for the year 1722.

† Phil. Transf. vol. 49. p. 518.

Both these younger branches of the Royal Family passed through the Small-pox in a *very favourable manner*: and inoculation, in consequence of this illustrious example, was now making a rapid progress, when the number of persons inoculated in England amounted to 182, *viz.*

By Dr. Nettleton	61
Mr. Maitland, Surgeon	57
Claud. Amyand, Esq. Serjeant Surgeon .	17
Dr. Dover	4
Mr. Weymouth, Surgeon	3
The Rev. Mr. Johnson	3

In or near London . . . 145

Mr. Smith, Surgeon, and Mr. Dymer, Apothecary, at Chichester	13
Dr. Brady, at Portsmouth	4
Mr. Waller, Apothecary, at Gosport . .	3
A Woman, at Leicester	8
Dr. Williams, at Haverfordwest	6
Two other persons near the same place .	2
Dr. French, at Bristol	1

In all . . . 182

Out of this number (says Dr. Jurin) the opposers of inoculation affirm, that *two* persons *died* of the inoculated Small-pox; the favourers of this practice

practice maintain, that their death was occasioned by *other causes*. If, to avoid dispute, these two be allowed to have died of inoculation, we must estimate the hazard of dying of the inoculated Small-pox, as far as can be collected from our own experience at present, to be that of *two* out of 182, or *one* out of 91, since which time by a proper preparation by medicine*, the favourable chances have been yet more increased. In the natural way the chances are as *one* to 6, which is a wonderful odds in favour of inoculation.

* Vide Sect. XLIII.

SECT. XXXIX.

THE OPPOSITION INOCULATION MET WITH.

PREVIOUS to my farther investigation of the nature of this disease, it may be proper to take some notice of the *opposition* which inoculation excited, and which was continued with much clamour throughout the year 1722. The objections then urged against inoculation, were both of a physical and moral nature, and gave rise to a controversy, in which men of various professions engaged. But as many of the objections, alledged by medical practitioners against the practice of inoculation, were founded upon casual and temporary circumstances, a recital of them now would be considered as wholly useless and uninteresting. Mr. MAITLAND, however, had to encounter some accusations which it was not easy to repel. He had asserted, and his enemies did not fail to remind him of it, that inoculation, as practised at Constantinople, was a process which almost universally produced the Small-pox in its mildest form; insomuch that not *one person in many thousands* died under it: and he had entertained no doubt of experiencing the like success in England. But after a few trials of inoculation made here, the result proved different from his flattering

ing

ing promises. *Two* persons actually died in consequence of the operation, when not even 200 had been inoculated. Mr. Maitland was therefore represented by some as *selfish* and *designing*, and by others as the *ignorant* and *credulous dupe* of the old women in Turkey. That *inoculation* did not constantly succeed in producing the distinct or favourable kind of Small-pox, was at that time, and still continues to be, a melancholy truth. But the inoculators were at first unwilling to acknowledge it, and by attempting to attribute the death of persons inoculated to other *accidental causes*, exposed themselves to a just censure.

On the other hand, the writers against inoculation pursued a conduct still more reprehensible. Instead of waiting to ascertain such facts as might have enabled them to form just conclusions on the advantages and disadvantages of this new art, they immediately proceeded to employ *falsehood* and *invective*; reproaching the inoculators with the epithets of *poisoners* and *murderers*.

I shall first notice a pamphlet published about the middle of the year 1722, entitled, *The new practice of inoculation considered, with an humble application to the approaching parliament for the preventing of that dangerous experiment*. In this work, however, the anonymous author confines his humility wholly to the title page. He represents the death of Lord Sunderland's son, and an unfortunate

fortunate case of inoculation at Boston, in the most aggravated point of view; and declares this new practice to be founded in *atheism, quackery, and avarice*, which, to use the author's words, "push men to all the hellish practices imaginable; making men murder fathers, mothers, relations, and innocent children, and any that stand in the way of their wicked desires."—He adds, "While this hellish principle has so much hold upon mankind, it is highly necessary that there should be no covering of such horrid things from the reach of the law; by inoculating death instead of a disease, and making use of an art never before practised, in a manner not foreseen, and by the laws not yet sufficiently guarded against."

The Rev. Mr. MASSEY, in a sermon, preached at St. Andrew's, Holborn*, "*Against the dangerous and sinful practice of inoculation*," treated the inoculators with the most unqualified abuse, calling them *hellish poisoners, enemies of mankind*, and hoped they would be distinguished from those of the faculty who *deserve honour*, and not be permitted to mingle with them as the *devil* among the sons of God.

But the intemperate zeal of the preacher does not stop here; it not only hurries him into numerous and palpable inconsistencies, but also to

* On Sunday, July 8th, 1722. His text was:—"So went SATAN forth from the presence of the Lord, and smote Job with sore boils, from the sole of his foot unto his crown." Chap. xi. verse 18.

gross misrepresentations of *facts*: for he roundly asserts, that “ *the miscarriages in this new method (of inoculation) are more than have happened in the ordinary way.*”

But the most redoubted champion who at this time appealed to the public against inoculation, was Dr. WAGSTAFFE, a man of extensive professional practice; and as a fellow of the College, and Physician to St. Bartholomew’s Hospital, he could not fail to influence the minds of many to a considerable degree; more especially as his “ *Letter, shewing the danger and uncertainty of inoculating the Small-pox,*” was addressed to the learned Dr. Freind.

Of the other writings, which now appeared against inoculation, I trust it will be unnecessary to take notice, as they contain little more than *unfounded conjectures* on the practice, with *fanciful conceits* concerning its *effects*; and supply the place of arguments with the *utmost obloquy and abuse* of Mr. Maitland.

The numerous attacks upon this gentleman and the other inoculators, produced various replies, especially to Dr. Wagstaffe and the Rev. Mr. Massey. The chief of them were by Dr. Crawford*, Dr. Brady†, Dr. Williams, Dr.

* *The case of inoculating the Small-pox considered, and its advantages asserted, in a review of Dr. Wagstaffe’s Letter,* by J. Crawford, M. D.

† *Some remarks upon Dr. Wagstaffe’s Letter and Mr. Massey’s Sermon against inoculation,* by Samuel Brady, M. D.

Slare*, and Mr. Maitland, or rather Dr. Arbuthnot†, who is said to have written *MAITLAND'S Vindication*; and the subject was pushed forward so warmly, that even *rejoinders* to these were published before the termination of the year 1722.

I shall be readily excused from following the above disputants, through the extraneous and multiplied points of controversy with which they indulged themselves, and have no doubt but that, both as to the manner and matter of their arguments, a single example will be deemed sufficient. Dr. Wagstaffe having asserted, “It never came
“into men’s heads to take the work out of nature’s hands, and raise distempers by art in the
“human body.” Received the following reply in Maitland’s *Vindication*, “That the practice of
“physic is founded upon the principle of curing
“*natural* by raising *artificial diseases*. What is
“*bleeding*, but an *artificial hæmorrhagy*? *Purging*,
“but raising an *artificial diarrhæa*? Are not *blisters*, *issues*, and *seetons*, *artificial imposthumations*?” On this Mr. Isaac Massey, apothecary, calls out,
“Very good, sir; but go on:—*What is correction*
“*at the cart’s tail*, but the noble art of muscular phle-

* *Some remarks on Dr. Wagstaffe’s Letter*, by Perrott Williams, M. D. *With an appendix in favour of inoculation*, by F. Slare, M. D.

† *Mr. Maitland’s account of inoculating the Small-pox vindicated from Dr. Wagstaffe’s misrepresentations of that practice, with some remarks on Mr. Massey’s sermon.*

“ botomy?—*What is burning in the hand, but the*
 “ *art of applying a caustic?—What is hanging, but an*
 “ *artificial quinsy, which makes the patient feel for the*
 “ *ground, and chokes him?—What is breaking on the*
 “ *wheel, but the art of making dislocations and frac-*
 “ *tures, and differs from the wounds and amputations*
 “ *of surgeons only by the manner and intentions*?*”

‡ *A short and plain account of inoculation, with some remarks,*
&c.—p. 19.

SECT. XL.

THE SUCCESSFUL ESTABLISHMENT OF INOCULATION IN ENGLAND.

ALTHOUGH the advantages of inoculation were great, in the first place, as it gave every prospect of recovery in this otherwise often fatal disease, and secondly, security in future, which removed the terror of apprehension, which, like a sword hung over the head, was sure often to present itself to the scared imagination, yet was its first introduction from the opposition it experienced extremely slow.

During the year 1723, the practice, however, of Inoculation made a considerable progress in England. It was adopted not only among the nobility of the first rank, but (which still more tended to its promotion) it received encouragement from the heads of the church, having been introduced into the family of the Bishop of Winchester, and also into that of that learned divine Dr. Calamy. Whence the number of the inoculated *that year*, far exceeded the numbers in the two preceding years taken together. It amounted to 292, which being added to 182, makes the whole number of the inoculations in the years 1721, 1722, and 1723, to be 474, *viz.*

The Results of these Cases are represented in the annexed Table, taken from Dr. Jurin.

AGES.	Persons inoculated.	Had the Small-pox by inoculation.	Had an imperfect fort.	Had no effect.	supposed to have died of inoculation.
Under One Year - -	11	11	0	0	0
One to Two - - - -	15	14	0	1	2
Two to Three - - -	31	31	0	0	1
Three to Four - - -	41	38	0	3	1
Four to Five - - - -	33	31	0	2	1
Five to Ten - - - -	140	137	1	2	2
Ten to Fifteen - - -	82	76	0	6	0
Fifteen to Twenty -	56	50	1	5	2
Twenty to Fifty-two	62	50	3	9	0
Age unknown - - -	3	2	0	1	0
Total - - -	474	440	5	29	9

Hence we find, that of the 474 persons first inoculated in England, *nine* died, and their deaths were justly suspected to have happened in consequence of inoculation.

Thus inoculation triumphed, under the auspices of royal patronage; and Dr. Wagstaffe, after his invidious remark, “ *that posterity will scarcely be brought to believe, that an experiment, practised only by a few ignorant women, should so far obtain in one* ” of

“ of the politeſt nations in the world, as to be received
 “ into the Royal palace,” had the mortification to
 find it introduced a *ſecond time* into the Royal
 family. For their Royal Highneſſes Prince
 FREDERICK and Prince WILLIAM were both
 inoculated *this year*. The former, who reſided at
 Hanover, and was then eighteen years of age,
 ſubmitted to be inoculated by Mr. Maitland on
 the firſt of May, 1724, and the event was ex-
 tremely favourable; his Royal Highneſs not hav-
 ing more than from eleven to eighteen puſtules.
 The latter, was about the ſame time inoculated
 here by Serjeant Surgeon Amyand, under the
 direction of Sir Hans Sloane, who likewiſe paſſed
 through the Small-pox without any alarming or
 even troubleſome ſymptom.

But what tended ſtill more effectually to eſtab-
 liſh general inoculation, was the ſubſequent de-
 claration of the College of Phyſicians, *viz.* “ THE
 “ COLLEGE HAVING BEEN INFORMED, THAT
 “ FALSE REPORTS CONCERNING THE SUCCESS
 “ OF INOCULATION IN ENGLAND, HAVE BEEN
 “ PUBLISHED IN FOREIGN COUNTRIES, THINK
 “ PROPER TO DECLARE THEIR SENTIMENTS IN
 “ THE FOLLOWING MANNER; *viz.* THAT THE
 “ ARGUMENTS WHICH AT THE COMMENCE-
 “ MENT OF THIS PRACTICE WERE URGED
 “ AGAINST IT, HAD BEEN REFUTED BY EX-
 “ PERIENCE; THAT IT IS NOW HELD BY THE
 “ ENGLISH IN GREATER ESTEEM, AND PRAC-
 “ TISED

“ TISED AMONG THEM MORE EXTENSIVELY
 “ THAN EVER IT WAS BEFORE; AND THAT THE
 “ COLLEGE THINKS IT TO BE HIGHLY SALU-
 “ TARY TO THE HUMAN RACE*.”

* The words are as follow ;—“ Quoniam collegio nuntiatum fuit, falsos de variolarum insititiarum in Anglia successu et existimatione apud exteras gentes nuper exiisse rumores, eidem collegio sententiam suam de rebus hisce ad hunc modum declarare placuit: videlicet, argumenta, quæ contra hanc variolas inferendi consuetudinem in principio afferebantur, experientiam refellisse; eamque hoc tempore majori in honore apud Anglos haberi, magisque quam unquam antea inter eos nunc invalescere; atque humano generi valde salutarem esse se existimare, *Vide Taylor Orat. Harv. page 29*

SECT. XLI.

OF THE DISTINCT AND CONFLUENT SMALL-POX.

THE most casual observers have noticed the *distinct* and *confluent* small-pox, and this is sometimes exhibited under the titles of the *purple*, and the *black*.

With those who labour under the Small-pox, at first reddish pustules, as small as a pin's head, appear scattered over the face and body. These form into pustules, often of the *distinct* kind, which are painful, and heighten by degrees, rendering the spaces between the eruptions of a light red colour, resembling that of damask roses; and the milder the small-pox, the nearer do the intermediate spaces approach this colour.

In the *confluent* or malignant Small-pox, there is a greater degree of fever, and the pustules are smaller, and run into one another. Instead of filling up on the seventh day from their first appearance, maturing and looking yellow, and then scaling, they have frequently, even at first, a *purplish* appearance, and finally become *livid*, and lastly *black*. Frequently *purple spots* appear in the spaces surrounding the eruption, and often small *black spots*, scarce so large

as small pins heads, and depressed in the middle, are discovered on the top of the pustules in different places. The face soon resembles one entire encrustation, *brown* at first, afterwards of a *frightful black*. Sometimes bladders arise, filled with a limpid serum, which burst when the flesh underneath appears *black*, and as if *gangrened* *. The change from *red* to *purple*, and *black*, in this disease, is extremely obvious; and, before the fatal catastrophe, the tortured being appears more like a *negro* than a white; all which seems to denote a destruction, or loss, of the OXYGENOUS PRINCIPLE in the blood.

* I was sent for, in the beginning of January, 1670, by Mr. Collins, a brewer, in St. Giles's parish, to his son, an infant, who had bladders on his thighs as large as a walnut, and full of transparent serum, which afterwards bursting, the flesh underneath appeared as it were quite mortified, and he died soon after; as did all those I had seen attacked with this dreadful symptom.—*Sydenham*.

*PRACTICAL OBSERVATIONS.***SECT. XLII.****THE TREATMENT OF THE NATURAL SMALL-POX.**

THE prevailing theory, respecting this disease, was, that the blood, by the matter of the small-pox, was put into a ferment, and therefore to promote concoction the external heat must be augmented, in order that the skum, or filth, might be thrown off upon the surface. How many thousands before, and since the days of Sydenham, have perished through this erroneous conception! This immortal physician first laid the foundation for abolishing this grand error; for his, as well as modern experience, shews, that the eruption greatly depends upon the quantity of combustible matter in the blood, or in other words, fever. It is during the eruptive fever that the quantity of the small-pox matter is determined, as well as its kind; for this is invariably found to bear an exact proportion to the preceding fever; and

hence it is that the diminution of this fever will diminish the quantity, and obviate the danger, of the variolous eruption. Hear the illustrious Sydenham on the present occasion. "What reason seemed, says he, to intimate formerly, appeared manifest to me this year, (1681), namely, *that it was improper to confine the patient constantly in bed* before the eruption of the pustules; for the spring and summer having been the driest seasons that any person living could remember to have happened, so that the grass was burnt up in most places, the blood was by this means deprived of the greater part of the humidity, which the air otherwise usually communicated thereto; whence the then reigning small-pox was accompanied with a more considerable inflammation than ordinary, and the other symptoms thence arising were more violent *. And this, I conceive, was the cause those *purple spots* frequently preceded the total eruption of the pustules, and that the violent inflammation which expelled them, by dissolving the texture of the blood, suddenly destroyed the patient, even on an early day of the disease. And the disease proved so much the more destructive, because the eruptions so

* As the spring and summer were remarkably dry seasons, it is probable they were likewise very hot; and then the unusual violence of the small-pox, and its symptoms, may be easily accounted for.

readily ran together, for the reason above intimated ; the intemperature of the air, now, doing the same mischief spontaneously, which ignorant practitioners ordinarily occasion, by using a hot regimen and cardiacs, at the beginning of the distemper. For it is a remark well worth noting, and the result of the most careful observation, that the small-pox is the least dangerous when the eruptions are few, and most so, when they are numerous ; and accordingly as they do, or do not abound, the patient lives, or dies.

“ I conceive it easy to account for the patient’s being more or less endangered, in proportion to the paucity or number of the eruptions ; for as every pustule is at first a *phlegmon*, or boil, though of a very small size, and soon impostumates, so the secondary fever, which depends on the matter hereafter to be produced, must needs be more or less violent at the height of the disease, according to the quantity of matter to be suppurated, which is usually completed in the mildest species of the confluent small-pox on the eleventh day, in the middle sort on the fourteenth, and the worst on the seventeenth day.

“ Hence, therefore, if the patient be not otherwise endangered than from the abundance of eruptions, I consider well whence this proceeds, and if it can be done with safety, use all my endeavours to *repress* them, which in reality is the principal thing to be effected, and the way to
relieve

relieve the patient; every thing being doubtful and dangerous when this species of the disease is confirmed. Now such an extraordinary eruption of pustules, in my opinion, proceeds from the too powerful an assimilation of the variolous matter; which seems chiefly to arise either from the *over-hot* and *spirituous constitution* of the patient, or from his having raised the fermentation too high, *by a too early confinement in bed*, the use of *hot cardiacs*, or any *spirituous liquor*; by which means the blood is disposed to receive the impressions of the disease more intimately, and nature, being greatly disturbed by the vast quantity of the variolous matter, changes almost all the solids and fluids into pustules*.

“ The immoderate assimilation of the variolous matter, however, cannot be more effectually promoted, than by the patient’s confining himself

* Mr. Sutton, in the vicinity of Plymouth, inoculating a lady, who on the third day after the commencement of the fever, had five or six red pimples, which formed gradually into pustules. During the progress of the disease, as she sat at table, she expressed uneasiness, and wished to have stronger evidence, than yet appeared, that she *had* the Small-pox. Mr. Sutton told her, that she had only to eat a portion of *hare*, which was on the table, and drink *one glass of wine*, and she would have sufficient evidence to satisfy her mind. She accepted the proposal; the fever increased; and the Small-pox, from being *discrete*, became *confluent*. Sutton then took fright, and delivered her to the care of Drs. Mudge and Huxham, by whose watchful attention she was carried safely through the secondary fever.

in bed unseasonably, namely, before the sixth day from the beginning of the illness, or the fourth inclusive from the eruption ; when all the pustules are come out, and no more are expected. And though the moderate warmth of the bed, even after this time, does in some measure contribute to the rise of the delirium, watching the other symptoms, yet these are of such a nature, that they readily yield to proper remedies ; whilst the imminent danger of death that happened on the eleventh day, from the great abundance of the pustules, cannot be prevented, or removed by medicine.

“ The patient therefore is here to be diligently admonished, by no means to keep his bed in the day-time, at the onset of the disease, whereby the eruptions will be fewer, and he will be greatly refreshed. But after this time, if the pustules be very numerous, he will scarce be able to leave his bed at all, on account of the pain thence arising, and a greater disposition to fainting upon sitting up ; so that having frequently remarked this, it came into my mind that nature, in the common course of the disease, first pointed out the time when a confinement in bed becomes necessary.

“ But in order to confirm this practical rule, which is so highly serviceable in lessening the impending danger from the Small-pox, and in
treating

treating of it, at the same time, to deliver our history thereof from the beginning to the end, it will be proper to draw up a kind of plan of the whole disease, and make a strict search into the nature and progress thereof; so that we may at length be enabled to ascertain the matter clearly, from the unerring reason of those who make use of the *justest observations*, and not from *opinion* founded on the *slippery basis* of *fancy*.

“ It the first place, therefore, its essence, so far as we can trace the essences of things, seems to consist in a peculiar inflammation of, or action on the blood; in the course of which nature is employed for some days, in the beginning, in preparing and moulding the inflamed particles, for their readier expulsion to the external parts; at which time the blood being disturbed, a fever must needs be occasioned; for, the agitated particles, hurrying in a tumultuary manner through the vessels, necessarily cause a sickness at stomach, sharp pains in the head, and all the other symptoms preceding the expulsion, according as they are carried to this or that particular part. But when the eruption is over, the *fleshy parts* become the seat of the disease; and, as nature has no other method of expelling the peccant matter from the blood, but by raising a fever, so, likewise, it does not free the fleshy parts from any extraneous body, but by impostumation,

Thus

Thus if by accident a thorn, or the like sharp-pointed body be lodged in the flesh, unless it be immediately extracted, the parts around soon impostumate. Hence it is, that when these particles are lodged in the flesh, they at first occasion very small phlegmons, wherein they lie concealed; which encreasing every hour, and becoming more inflamed, at length come to suppuration; when a part of the matter must needs be licked up by the blood which returns by the veins, and if too large a quantity thereof be received into the mass, it is not only productive of a fever, which the debilitated patient is unable to bear, but also taints the whole mass.

“ But if only a small quantity of the purulent matter be received into the blood, the violence of the secondary fever is easily checked by the encreasing strength of nature, and the pustules drying away gradually, the patient soon recovers.

“ Now allowing this to be the genuine and just history of this disease, it is manifest, that the failure or success, on either hand, depends upon laying a good or bad foundation for the cure in the beginning: for if these hot and spirituous particles be quickened by hot medicines, and especially by a constant confinement in bed, the assimilating virtue, which they already possess in too great a degree, will necessarily be heightened

heightened and encreased. And, besides, the blood and other juices being hereby heated, yield more readily to the stronger impresson of the particles, whence more eruptions appear than should, and life is, in consequence, unnecessarily endangered. Whereas the contrary, viz. the moderate *cooling regimen* and the **FREE USE OF THE AIR**, abate the force of the hot tumultuary particles, whence they are better enabled to resist the morbidic particles, and support their violence ; and hence no greater quantity of variolous matter is prepared, than is proper to mark this disease.

“ But the only inconvenience arising from a too early confinement in bed, is not from the assimilation of too large a quantity of the morbidic matter, and the immoderate exaltation of the ferment of the disease ; for the same cause frequently **PRODUCES** *bloody urine* and *purple spots*, with *hæmorrhage*, especially in summer, and in persons in the vigour of life. I conceive that both these symptoms proceed from the heat and commotion raised in the blood, by hot and spirituous particles ; by which it is agitated and considerably attenuated, so that it bursts the vessels, causing *bloody urine* when it forces its way through the kidneys, and *purple spots*, when it is strained through the extremities of the arteries, terminating in the muscles and skin, which resemble

resemble so many mortifications in those parts wherein the extravasated blood is coagulated. And though all these symptoms might easily have been *prevented* in the beginning, by a *cooling regimen* and *diet*; yet when they actually appear, whoever attempts to cure them, by confining the patient in bed, and exhibiting cardiacs, will find himself as much in the wrong as an old woman would be, who, to make her pot boil more gently, should make a larger fire underneath.

“ But to acknowledge the truth upon this occasion, how little soever it may be liked by the dogmatical, and such as are unacquainted with this matter, and therefore incompetent judges, it is not only unsafe to keep the patient always in bed the first days of the illness, but sometimes necessary to expose him to the OPEN AIR; viz. if it be the summer season, and he not past the prime of life, or that he has been accustomed to spirituous liquors, and especially if the disease be owing to hard drinking. Now in these cases I conceive, that the too hasty eruption of the pustules cannot be sufficiently checked by refraining from bed, and taking no cardiacs; for the blood, unassisted by these, is so overstocked with hot spirits, of a like kind with the disease, that a kind of violent explosion thereof must necessarily happen; and moreover, such a plenitude of humours will resolve into
pustules,

pustules, that the patient being quite oppressed by the copious matter returning into the blood, must inevitably perish at the close of the disease.

“ Nor have I hitherto found that bleeding, though it be used early, does so effectually check the over-hasty assimilation of the variolous matter, as cooling the blood*, by the *air* received in by breathing, especially if the patient be put to bed immediately after the operation, and injured by hot cardiacs; the blood being by this means more disposed to receive the impressions of the adventitious heat, than it was before bleeding. And I positively affirm, that one of the worst cases I ever met with in the confluent Small-pox, in which the patient died on the eleventh day, happened in a young woman soon after her recovery from a rheumatism, by the usual method of copious and repeated bleeding. And from this instance I first learned, that *bleeding* did not contribute so much to keep the Small-pox within its due limits, as I heretofore imagined; though I have frequently observed that *repeated purging*, whilst the blood remains uninfected, generally renders the subsequent Small-pox of a mild and distinct kind.

“ I am well aware that several objections may

* This was the error of Harvey and of the times. The office of the *air* is now better known, as imparting OXYGEN to the blood.

be made to this opinion of ours, of permitting the patient to sit up in the day time ; which may have great weight with the *common people*, and such as are little skilled in this disease, *to whom* the lower rank of physicians generally appeal as proper judges in the case, that they may support their ill-grounded reasonings by their authority : such reasonings being in reality better adapted to their capacities, than those that are the result of deliberate consideration in men of deeper penetration. *Hence it follows, that as the bulk of mankind can only arrive at a superficial knowledge of things, and but few have ability to go to the bottom, so these pretenders to learning easily acquire a superiority over the more intelligent, who are often exposed to calumny, but without being discouraged thereby, because they have truth, and the men of sound judgment on their side.*

“ However I am not so attached to my own opinion, as to think, that what I have here delivered should be credited upon the authority of my slender judgment. And in reality, I have ever so slightly esteemed the sentiments of the generality of mankind, that I may always reasonably suspect my own, when they clash with those of others ; and I should also be upon my guard in this case, if my reasonings were not unanimously supported by *practical observations*. For setting aside these, what appears reasonably prevailed, no one would have sought after such

to me or any other person, may, perhaps, be nothing more than the shadow of reason, that is barely opinion. And the more I converse with men, the more I am convinced how dangerous it is for persons of the acutest understanding, to make a strict search into any art or science, unless *matter of fact* be constituted the judge and test of truth and falsity. For, to use Cicero's phrase, those who are so strongly prepossessed of their abilities, deviate widely from truth, in mere *speculative matters*; whereas those who apply their minds only to such things as may be certainly determined by *practice*, though they should happen to mistake, would soon be set right, by bringing their ideas to this touchstone. For instance in the present case, cannot I certify myself by *observation*, what method is most productive of a favourable or severe kind of Small-pox; and form a judgment thereof, suitable to the clearness of the *fact*? And if others would follow this way of reasoning, I should be satisfied with their conduct; but it is most unjust to accuse me of advancing falsities, without having once experienced, whether the method, so often mentioned above, of keeping the patient up in the day time, at the beginning of the illness, be advantageous or detrimental. Sure if this humour of defaming those who discovered truths, though contrary to generally received opinions, had formerly

such things, as when found, might be useful to mankind. But why should I give myself so much trouble, if a long course of experience did not manifest this method to be *much safer* than the common one : for I am not so senseless as to endeavour to acquire reputation, by exploding the opinions of those whom I ought to flatter, if I sought after applause. Neither is it to be supposed that I am so abandoned, as to use my authority to compass the destruction of late posterity after my decease, that though I might murder my fellow creatures when I am dead, as well as during my life ; which I tremble even to mention.

“ However it be, I have followed this method in my own children, my nearest relations, and all those I have attended ; and am conscious of *no error*, unless in yielding sometimes to persons of a contrary opinion, to avoid the imputation of moroseness and obstinacy ; and for the truth of this, I appeal to my intimate acquaintance.

“ When the case is thus circumstanced, the physician, consulting his duty rather than a precarious reputation, ought with authority to order the patient to be *refreshed with the open air* ; and to obtain the end here, it has frequently seemed sufficient to me, for the patient to rise, and sit up awhile, even in a delirium, the window being opened, by which expedient I have saved several from death.

And

And besides those I have seen, there are numberless instances of persons who by this means have been snatched from imminent danger. For some delirious persons deceiving their nurses, and getting out of bed, have remained exposed to the cold air, even in the night-time, with advantage ; and others again, either secretly, unawares, or by entreaty, have procured cold water to drink, and thus, by a happy mistake, saved their lives, when despaired of.

“ I shall here set down the history of a case, which I had from the person concerned. He told me, that when he was a young man, he went to Bristol, and was there seized with the Small-pox about Midsummer, followed soon after by a delirium. His nurse, going into the city, left him in the mean while to the care of some other persons, intending to be back soon ; but making a pretty long stay, the patient in the interim died, as the attendants thought ; who considering the heat of the season, and his corpulency, that the body might not smell, took it *out of bed*, and laid it *naked* on a table, throwing a sheet over it. The nurse at length returned, and hearing the ill news, entered the room to behold the sad spectacle, and immediately throwing by the sheet, and looking on his face, she imagined she saw some small signs of life, and therefore put him to bed again directly, and using some means
or

or other, she brought him to himself, and he recovered in a few days *.

“ I own, indeed, that the Small-pox, in what manner soever it be treated, will sometimes prove highly confluent; whence this disease is never void of danger, though the best method and medicines be used to prevent it.

“ And therefore I scruple not to assert, that the reputation of the physician, who is frequently employed in it, is much exposed to censure; for not only the vulgar are apt to attribute the cause of the patient's death to the over-officiousness of the physician, but even the professors of the same art sometimes take occasion from thence to defame their brother, and haranguing before partial judges, easily obtain the severe sentence against him, with this view, that they may procure greater esteem for themselves, and build their rise upon the ruin of others; which is a practice utterly unbecoming men of letters, and even the meanest artizans, provided they have a regard for probity.

“ But this I affirm, which is sufficient for my purpose, that it is manifest, from frequent expe-

* I have good information, says the learned Dr. Monro, Professor at Edinburgh, of 112 being inoculated in the middle of winter, in some of our most northern isles, where there was scarce fuel enough to prepare victuals, and many of the inoculated went abroad bare-footed in snow and ice; yet not one of the whole number died.

rience, that *he that refrains from bed in the day time, at the beginning of the disease, abstains entirely from flesh, and drinks only small liquors, is abundantly safer than he that confines himself immediately in bed, and takes hot cardiacs.* For this method, as above-mentioned, generally occasions only *few eruptions*, and consequently checks the excessive effervescence of the *secondary fever*. Moreover, *this method is preventive of the purple spots, and bloody urine; both which symptoms seize at the beginning of the disease, and often before any sign of the eruption appears, which ordinarily happens also in the measles, scarlet fever, and other acute diseases proceeding from a violent inflammation.* Not to mention the singular refreshment the patient finds from the admission of *fresh air*, every time he is taken out of his warm bed; which, all those that I was suffered to treat in this manner openly declared, and were very thankful for; having, as it were, received *new life and spirits* from breathing a *freer air*.

“ I must proceed next to observe, that though the patient may sometimes refrain from bed in the day time, yet in case of extreme sickness, a high fever, enormous vomiting, a vertigo, rheumatic pains of the limbs, and the like disorders; he cannot be indulged this refreshment, these symptoms indicating the contrary; which, if they be violent, especially in the young and sanguine, foreshew that a large quantity of the variolous

riolous

riolous matter is generated in the body, and threaten great danger from the tumultuary eruption of the pustules, which will prove very confluent. In this case, therefore, as all endeavours must be used to check the immoderate ferment, which notwithstanding, on the one hand, will rage more by the continual warmth of the bed, and yet, on the other hand, the patient cannot keep up, by reason of extreme sickness, unless we relieve him; it is indispensably necessary to give a vomit of the infusion of *crocus metallorum* *, which not only expels the matter occasioning this unusual sickness, but refreshes the patient so considerably, that being now in a manner well, he is able to refrain from bed. Neither are we to endeavour to weaken the force of the ferment by this method only, but in order to put the patient further out of danger, besides the evacuations just mentioned, it is proper to give him a large dose of *spirit of vitriol* (*vitriolic acid*,) in every draught of small beer, till the eruption be over. And notwithstanding these evacuations, and the use of the cooling drink, the patient must refrain from bed in the day time, if he can bear to sit up; because these general remedies do not check the assimilation of the variolous matter, near so much as once cooling the blood by drawing in the *fresh air*, and breathing it out by the lungs; which *alone* immediately abates

* Semi-vitrious sulphurated *oxyl* of antimony.

the symptomatic sickness above-mentioned, as I have sometimes experienced. But this unusual method is not necessary, unless in such as are in the prime of life, whose blood has been overheated by food, or wine, and in others (always excepting young children,) who, together with the Small-pox, struggle with the above-mentioned violent symptoms. For where the blood is less inflamed, and the symptoms milder, as there is much less danger of assimilating the variolous matter too hastily, so of course, neither the above-mentioned evacuations, nor the *spirit of vitriol*, need be used.

“ *This spirit*, as if it were truly a *specific* in this disease, surprizingly abated all the symptoms; the face swells earlier, and in a greater degree, the spaces between the eruptions approaches more to a bright red colour, like that of a damask rose; the smallest pustules also became as large as this species would allow, and those, which had otherwise been *black*, discharged a yellow matter, resembling a honey-comb; the face, instead of being *black*, appeared everywhere of a deep yellow; lastly, the eruptions came sooner to suppuration, and ran through all their stages a day or two sooner than usual. In this manner did the disease proceed, provided the patient drank freely of the liquor above commended; so that, when I found there was not enough of it drank to take off the symptoms, I exhibited

exhibited some drops of the spirit of vitriol between whites, in a spoonful of some syrup, or a mixture of some distilled water and syrup, in order to make amends for the sparing use of the above-mentioned liquor, where this acid was more largely diluted.

“ I have enumerated the many advantages of this medicine, and indeed I have not hitherto found the least inconveniencæ attending the use thereof: for though it mostly stopped the salivation on the tenth or eleventh day, yet some stools usually succeeded at this time instead of it, which were less dangerous than that stoppage; for, as we have often mentioned, such as have the confluent Small-pox are principally endangered on these days, because the saliva, being rendered more viscid, does then threaten suffocation. Now, in the present case, this symptom is relieved by the looseness, which yet either goes off spontaneously, or is easily cured by the milk and water, and an opiate, when the danger from the Small-pox is over.

“ On the 26th of July, 1675, Mr. Elliot, one of the grooms of the bed-chamber to the king, committed to my care one of his servants, who had this dreadful species, the *black Small-pox*. He was about eighteen years of age, of a very sanguine constitution, and was attacked with this distemper soon after hard drinking. The pustules were of the confluent kind, and ran together

gether more than any I had hitherto seen, so that scarce any intermediate space was left between them. Relying upon the *virtue* of this *efficacious medicine*, I omitted *bleeding*, though I was called in soon enough to have done it, and ought indeed to have performed it, as the disease was occasioned by drinking wine too plentifully. When the eruption was over, viz. on the fifth or sixth day, I ordered SPIRIT OF VITRIOL to be dropped into some bottles that were filled with small beer, and allowed this liquor to be drank at pleasure for common drink. On the eighth day he bled so much at the nose, that the nurse, terrified by this symptom, sent in great haste for me. Accordingly I went, and perceiving that the hæmorrhage arose from the immoderate heat, and extraordinary commotion of the blood, I ordered him to drink more freely of the *acidulated* small beer, whereby the flux of blood was soon stopped. The salivation being plentiful enough, and the swelling of the face and hands, and the filling of the pustules, proceeding in a proper manner, the disease went on very well, except that in the decline it was attended with some blood, and mucous stools, which might possibly have been prevented by bleeding in the beginning. Nevertheless, I used no other medicine in this dysentery, since this symptom required nothing further than the opiate, which I should have ordered to be taken every evening,

if

if this disorder had not happened; and by this means it was checked, till the eruptions went off; and the patient soon recovered.

“About the same time Mr. Clinch, a neighbouring gentleman, committed two of his children to my care; the one was four years of age, and the other suckled, and was not six months old; the eruptions were very small and confluent in both, and of the *black kind*, and came out like an erysipelas. I directed *spirit of vitriol* to be dropped into all their drink, which, notwithstanding their age, they drank without aversion; and not being affected with any more violent symptom, they soon recovered. My intimate friend, Dr. Mapletoft, accompanying me to visit them, found the eldest recovering, and the youngest then lying ill in the cradle.

“I will subjoin a late case, as a specimen of this whole procedure. I was sent for this winter by lady Dacres, to attend her nephew, Mr. Thomas Chute, a person of a very sanguine constitution, and in the prime of life. The day before I came he was seized with a high fever, vomited a considerable quantity of bilious matter, and had a violent pain in his back. In order to mitigate these symptoms, he went to bed, and by heaping on clothes, and taking hot liquors, spent a day to no purpose, in endeavouring to force sweat, the great tendency to vomiting, and the purging, though moderate, rendering the sudorifics,

rifics ineffectual, and in the mean time increasing the fever. I suspected the Small-pox would shortly appear, and likewise prove very confluent, both on account of his youth, and the great inflammation raised in his blood by the fruitless attempt to procure sweat, which, if the disease had happened in the summer, would certainly have occasioned bloody urine and *purple spots*; but chiefly, because I have always observed, that in young persons, attacked with excessive vomiting, sickness, and extraordinary pain, the succeeding Small-pox proved highly confluent. For this reason, judging it requisite to use all endeavours to prevent the too-hasty assimilation of the varolous matter, I kept him up till his usual time of going to bed; and the next day in the morning, which was the third, the Small-pox not appearing, I directed eight ounces of blood to be taken away from the right arm. The blood was good and florid, and having as yet only received the spirituous miasm, and not that putrefaction occasioned by a longer continuance of the disease, and generally observable in the blood of persons lately recovered from this disease. The same day, at five in the afternoon, I exhibited an ounce of the infusion of *crocus metallorum*; which operated well, carrying off his sickness, so that he seemed much better and willingly refrained from bed, which he did not care to quit before by reason of his great sickness
and

and giddinefs. On the fourth day in the morning, I found the eruptions coming out fo copioufly, notwithstanding the endeavours I had ufed to prevent it, that they threatened the utmoft danger, I was, therefore, very cautious to keep him up in the day time, and advifed the drinking of fmall-beer *acidulated* with *ſpirit of vitriol*. He continued the ufe of theſe things to the fixth day, when, though he was not fick, but much refreshed by the *freſh air*, yet his belly was foluble between whiles ; towards night he was obliged to go to bed, which is common in this caſe, and therefore, he continued therein, by my conſent, during the whole courſe of the diſeaſe ; the eruption being now over. Though the puſtules were fewer than I have obſerved in ſome that have died of this diſeaſe, yet they were more numerous than they generally are in moſt that recover.

“ And now I have given the reader,” ſays Sydenham, “ my *chief* obſervations relating to the Small-pox ; and though they may perhaps in this cenſorious age, be eſteemed of little moment, yet I have with great pains and care ſpent *many years in examining them* ; nor had I now publiſhed them, if a deſign of benefiting mankind had not induced me to it, even at the *expence* of my *reputation*, which I am ſenſible will ſuffer on account of the *novelty* of the method.”

SECT. XLIII.

OF THE TREATMENT OF THE INOCULATED
SMALL-POX,

THIS is divided into two parts, the preparation before, and the plan to be followed after, the appearance of the eruption. The immortal Boerhave conjectures that the highest advantage will hereafter be derived by finding out an antidote to the variolous as to other poisons. "Let us enquire," says he, with a sagacity almost prophetic, "whether in ANTIMONY and MERCURY, reduced to a state of CALX (an oxyd) this prophylactic power does not exist?"

His commentator, Van Swieten, relates, that several physicians have profited of this hint, and the result was, that not only few, but sometimes even no pustules whatever have appeared. A physician gave to his own child, who had all the symptoms of the eruptive fever, a sufficient dose of dulcified mercury (calomel) by which she purged and vomited, after which she slept quietly, nor did any eruption whatever appear, although her brother at the same time, who was not so treated, was a sight from the quantity of eruption. After which he gave the same to eight

* Vide Aphorism 1391 and 1392,

others, and with this effect, that they had very few pustules*. Modern experience has since shewn, that if you mix the virus of Small-pox with *muriate of Mercury*, it is disarmed of its power of producing the disease.

In 1750, Dr. Adam Thomson, upon the suggestion of the 1392 aphorism of Boerhaave, was led to prepare his patients by a composition of *antimony* and *mercury*; which he employed with uninterrupted success for the space of twelve years. He relates that only *one* out of 700 died with this manner of preparation*. We find his plan more particularly noticed in the Pennsylvania Gazette, June 26, 1760.

A CERTAIN WAY OF AVOIDING THE DANGER OF THE SMALL-POX.

“ The night before you inoculate, give a few
 “ grains of *calomel*, (oxyd of mercury) well levi-
 “ gated, with a like quantity of *diaphoretic anti-*
 “ *mony*, (oxyd of antimony) unwashed, propor-
 “ tioning the quantity of calomel to the constitu-
 “ tion of your patient; from four grains to ten
 “ for a grown person, and from one to three for

* Van Swieten refers us to Miscellan. curior. dec. 1. an. 3. page 13. for this history.

† *Vide* A Discourse on the preparation of the body for the Small-pox, and the manner of receiving the infection, as it was delivered in the public hall of the Academy.

“ a child,

“ a child, to be made up into a bolus or small
 “ pill, with a little conserve of roses, or any com-
 “ mon syrup. The next morning give a purge
 “ of the pulvis cornachini, made with equal
 “ parts of *diaphoretic antimony*, scammony, and
 “ *cream of tartar*. Repeat the bolus or pill
 “ three times, that is, once every other night
 “ after inoculation; and on the fifth day give a
 “ dose of Boerhaave’s *Golden Sulphur of Antimony*:
 “ about four grains of it for a grown person, with
 “ two or three grains of *calomel*, made into a
 “ small pill, will operate both as a vomit and a
 “ purge at the same time.”

“ In the intermediate days, give two or three
 “ papers of the following powders, *viz.* *diapho-*
 “ *retic antimony**, ten grains; *sal prunel*†, six
 “ grains; and *calomel*, one grain, mixed together,
 “ for a grown person; and about one fourth part
 “ of a paper for a child.

“ These powders are to be continued until the
 “ variolous or Small-pox fever is over; and while
 “ the fever is high, let your patient drink a cup
 “ of *whey* two or three times a day; the whey to
 “ be made of *cream of tartar*‡ instead of runnet,
 “ and those that are of a full habit, should be
 “ blooded once or twice within the first eight

* White *oxyd* of antimony by nitre, according to the new nomenclature of chemistry.

† Purified nitre.

‡ Acidulous tartrate of potash.

“ days,

“ days, and must abstain from all spirituous
 “ liquor, and from meat of all kinds, broth, salt,
 “ and butter.”

The next publication which I shall notice, is that of Dr. ANDREW, of Exeter, in 1765, entitled, “ *The practice of Inoculation impartially considered; its signal advantages fully proved; and the popular objections against it confuted.*” In the practical part of this pamphlet the author strenuously contends for the use of *mercurial purgatives* and *antimonials*, as a necessary preparation for inoculation.

On this subject he cites the following letter from Dr. HUXHAM, dated Plymouth, January 1765:—“ So long ago as 1724, I suggested that
 “ mercurials, as well-prepared *calomel*, or the
 “ like, might be of use in the Small-pox. I seldom fail of giving a mercurial purge or two,
 “ previously to inoculation of a person for the
 “ Small-pox. Sometimes also I give my *antimoni-
 “ niated aethiops*. He adds, the use of *mercurials*
 “ and *antimonials* will more fully appear, as preparatory to inoculation, by what the ingenious
 “ Dr. Benjamin GALE, of Connecticut, in New
 “ England, has communicated to me in his ‘ *Dif-
 “ fertation on the Inoculation of the Small-pox in Ame-
 “ rica*,’ in which he says, ‘ *Before the use of mer-
 “ cury and antimony, in preparing persons for inocula-
 “ tion, one of 100 of the inoculated died, but since
 “ only one of 800.*’”

According

. According to Dr. Gale, the use of *mercury* in the Small-pox was first resorted to in the *English American Colonies* in 1745, when it was employed with success by Dr. THOMAS, of Virginia, “ and Dr. MURISON, of Long Island, in the Province of New York.

In the year 1752, there was an exact account taken by order of the magistrates of the town of Boston, and rendered upon oath, of all who had the Small-pox, either in the natural way, or by inoculation, and the precise number of those who had died of it in either; by which it appears, the number of the inhabitants amounted to 15,734. Those who had the distemper in the natural way amounted to 5,544, of which 514 died.—The whole number inoculated amounted to 2,113, of which 30 died. Hitherto mercury had not been made use of in inoculation at Boston; but in 1764 the Small-pox visited Boston again, when Dr. Gale says, by the last accounts 3,000 had recovered from inoculation in the *new method* by the use of *mercury*, and five only had died.

The practice of the venerable Sydenham was nearly exploded, when a new æra in the history of inoculation took place, by the introduction of the *Suttonian practice*, which in the year 1765 had extended so rapidly in the counties of Essex and Kent, as to much interest the public, who were not less surprised by the novel manner in which it was conducted, than by the *uninterrupted*

rupted success with which it was attended upon a prodigious number of persons.

Mr. ROBERT SUTTON, the first of this name who acquired celebrity as an inoculator, resided at Debenham, in Suffolk, where he practised surgery and pharmacy. He began to inoculate in February, 1757, in which year the number of persons inoculated by him was 41

In the year 1758 he inoculated 27

1759 132

1760 135

1761 113

1762 452

1763 575

1764 243

1765 333

1766 224

1767 239

2,514

Two of his sons, ROBERT and DANIEL, designing to follow the profession of their father, were employed in the dispensing of medicines, and in assisting him during the three first years of his practice of inoculation: after which Robert, the elder brother, removed to Bury St. Edmund's, where he became an established inoculator; while Daniel acted as assistant to Mr. Bumstead, a surgeon and apothecary at Oxford.—The latter, on
his

his return to Debenham, in the year 1763, suggested to his father (as I was informed by him) a **NEW PLAN** of inoculation, in which he proposed to *shorten the time of preparation to a few days, and not to confine the inoculated patients to the house, but to oblige them to be in the open air as much as possible during the whole progress of the distemper.*

To reduce the process preparatory to inoculation, from a month, which was then the usual time, to eight or ten days, was to obviate the objections that many persons had made to inoculation, from the great length of time it required. This, therefore, might be thought a measure of expediency, to bring a greater number of patients; but obliging those under inoculation to walk out in the *cold air*, during the eruptive fever, seems to have been a practice derived from Sydenham, and confirmed by experience. However, Mr. Sutton, the *father*, could not be persuaded to adopt any innovation in his practice of inoculation, and would not hear of his son's new scheme, which he *condemned* as not only *rash* and *absurd*, but as *extremely dangerous*. Daniel soon afterwards, however, availed himself of repeated opportunities of carrying it into effect, and found it to answer his utmost expectations. The advantages of this *new plan* were soon perceived by the *patients*, who now began to manifest a desire of being solely under the direction of Mr. D. Sutton. This preference gave occasion to a dispute

pute between the father and the son, about the end of the year 1763, when the latter determined to practise inoculation uncontrolled by parental authority; and for this purpose he opened a house in the neighbourhood of Ingatestone, in Essex. Here the young adventurous inoculator, by public advertisements, and hand-bills, proposed to inoculate upon an *improved method*, peculiar to himself; and also hinted, that by the *use of certain medicines*, he could always render the *Small-pox* an *innocent* and *tractable disease*. Three months elapsed before he profited by his new situation: but he afterwards succeeded so well, that at the close of the first year his profession produced him 2000 *guineas*: and in the second year, which he says was the most profitable of any that he experienced, his fees amounted to more than *treble this sum*. His fame was now spread to the most distant parts of the kingdom; and the numbers that resorted to him for inoculation, constantly filled the village of Ingatestone, so that it was with great difficulty lodgings could be procured for the purpose. His practice in Kent being also very extensive, he was under the necessity of employing several medical assistants*.

* In 1767, Mr. D. Sutton, removed to London; where he hoped to profit by his profession still more than he had done in the country; but his practice here fell far short of his expectations; and the two houses, one at Kensington Gore, and another at Brentford, which were procured for his inoculated patients, were soon abandoned.

Great, however, as might be the number which he inoculated, and the success of his practice, yet they were both, perhaps, exaggerated, not only by public report, but by the pen of the Reverend ROBERT HOULTON*. This gentleman, who styles himself "*Chaplain to the Earl of Ilchester,*" asserted, "*that not one person out of a thousand inoculated by Mr. Sutton, had more various pustules than he could wish, and that if any patient had twenty or thirty pustules, he was said to have the Small-pox very heavily.*" He says, "*If Mr. Sutton perceives a symptom in patients of great fever, or a probability of their having more pustules than they would choose, he quickly prevents both by virtue of his medicines;*" for, according to this writer, "*the Sutton family is in possession of an INESTIMABLE MEDICINE, by the use of which a too great burthen of pustules can infallibly be prevented.*"

According to Mr. Houlton's statement, the number of persons inoculated by Mr. Daniel Sutton, in the year, 1764 was 1629

1765 . . .	4347
. 1766 . . .	7816

18,792

* Vide "*A Sermon preached at Ingatestone, Essex, October 12, 1766, in Defence of Inoculation. To which is added, an Appendix on the present State of Inoculation.*"

“ To the above number (says he) should be added
 “ 6,000 that have been inoculated by Mr. Sutton’s
 “ assistants; so that he may be said to have inoculated
 “ within these three years 20,000 persons.”

“ Of the above multitude he denies that a sin-
 “ gle patient has died really from INOCULATION
 “ (by him or his assistants) or from its effects. The
 “ death of two or three who died, was owing,
 “ one to his own imprudence in being drunk
 “ several times during the eruption; the other
 “ two to complicated disorders, which would
 “ have killed them had they not been inoculated:
 “ for as to Small-pox, they had but very few
 “ pustules, and had taken their leave of Mr.
 “ Sutton.”

Though this and other accounts of Mr. Sutton’s practice, magnified it probably beyond its real merit, yet not a doubt could be entertained but that the *Suttonian plan* of inoculation was incomparably more successful than that of any other practitioner.

It cannot therefore appear surprising, that the attention of medical men should be directed to investigate the *causes* which gave this new method of inoculation such a decided advantage. Thus we find Sir George Baker, President of the London College, and Physician to the King, was the first to embark in the pursuit, and to detail the *new process* of inoculation by Mr. D. Sutton, which he has done as follows:—

“ All persons,” says this physician, “ are
 “ obliged to go through a strict preparatory *regi-*
 “ *men* for a fortnight before the operation is per-
 “ formed. During this course, every kind of
 “ *animal food*, milk only excepted, and all *fer-*
 “ *mented liquors* and *spices*, are *forbidden*. Fruit
 “ of all sorts is *allowed*, except only on those
 “ days when a *purging medicine* is taken. In this
 “ fortnight of preparation, a dose of a *powder* is
 “ ordered to be taken at bed-time, three several
 “ times; and on the following mornings, a dose
 “ of purging salt. To children, only three doses
 “ of the powder are given, *without any purging*
 “ *salt*. The composition of this *powder* is in-
 “ dustriously kept a secret. But that it consists
 “ partly of a MERCURIAL preparation, is *demon-*
 “ *strated by its having made the gums of several peo-*
 “ *ple sore, and even salivated others*.

“ As soon as the eruption has made its first
 “ appearance, he obliges every body to get up,
 “ to walk about the house, or into the garden.
 “ From this time to the turn of the disease, he
 “ gives milk-gruel *ad libitum*.

“ What is above-written is to be considered as
 “ relating only to the practice of one gentleman
 “ (Mr. D. Sutton.) There are in different parts
 “ of the country several other inoculators, some
 “ of whom are said to have surpassed this person
 “ in the boldness of their practice. We have
 “ heard of patients who have been carried into
 “ the

“ the fields while shivering in a *rigor*; or of their
 “ having been allowed no liquor, except what
 “ they have been able to procure for themselves
 “ at the pump, while the fever has been upon
 “ them; and of their having been indiscriminate-
 “ ly exposed to the air, in all sorts of weather,
 “ and in all seasons, during every period of the
 “ eruption. *This and more has been related upon*
 “ *good authority: and indeed it is certain that many*
 “ *thousands, of all constitutions and ages, even to that*
 “ *of seventy years, have within these few years been*
 “ *inoculated, according to the general method above*
 “ *described; and in general have gone through the*
 “ *disease almost without an unfavourable symptom.*
 “ *According to the best information which I can pro-*
 “ *cure, about SEVENTEEN THOUSAND have been*
 “ *thus inoculated; of which number no more than*
 “ *FIVE or SIX have died.*”

After stating this as the Suttonian practice, Sir
 George proceeds to examine, to what causes its
 superior success is to be ascribed; and upon com-
 paring it circumstantially with the other methods,
 he concludes that the principal advantage of it is
 derived from the free use of COLD AIR, in
 which the Suttons indulged their patients through
 the whole process of the disease, to a much greater
 degree than what had generally been allowed.
 In confirmation of this opinion, he inquires into
 Sydenham's method of treating his variolous pa-
 tients, and shows, that this accurate practitioner
 gradually

gradually became a greater patron of the cool regimen, in proportion to the progress which he made in his knowledge of the disease. Many other facts are also adduced, proving the great efficacy of the cool treatment in the Small-pox.

A few months after the publication of this "Inquiry," appeared "*A letter from Dr. GLASS (of Exeter) to Sir George Baker,*" in which the former differs from the latter, in not attributing the *chief advantage* of the Suttonian process of inoculation to the more free employment of the cool regimen. Dr. Glass, however, admits that practical observations furnish undeniable evidence of the good effects of *cold air*, as well in common as in some very desperate cases of Small-pox; but he contends, that the extraordinary success of inoculation, under the direction of Mr. Sutton, depends upon other means. He says, the patients, on having a considerable degree of fever, are permitted to lie in bed, and that an apothecary of his acquaintance, who visited the inoculator's hospital last year, found three of them in bed, and saw the matron of the house give to each of them a *small tumbler of liquor*, and was informed by her they were to continue in bed until the eruption appeared. The liquor she gave them, they called *punch*; it had the appearance of pure water, and tasted somewhat like sherbet. This **ACID LIQUOR** was given three or four times a day, to all the patients in whom the eruptive

eruptive symptoms were attended with much fever, and its ordinary effect was that of a sudorific; but if it did not produce perspiration, a pill or powder, still more powerful, was administered. Thus, Dr. Glas observes, it is a constant rule with the Suttons to keep their patients in a sweat for some time before the appearance of the eruption, and to proportion the degree of the sweat to the height of the fever. Hence he thinks it “highly
 “probable, that their great success is chiefly
 “owing to their singular method of disposing
 “their patients to *sweat*, and then sweating them
 “by the medicines given after inoculation, and
 “during the eruptive fever.”

The Reverend Mr. HOULTON now came forward to declare, that the publications of Drs. Baker and Glas contained “*little, very little in-*
 “*deed, of the true Suttonian practice of inocula-*
 “*tion.* The time, say he, will come perhaps
 “when the Sutton family will generously disclose
 “to the world their justly singular, noble, and
 “inestimable practice of inoculation*.”

This Reverend Author here complains of the persecution of D. Sutton, even to the following extent:—“About the beginning of last summer, the
 “Small-pox broke out in a most violent manner
 “at Chelmsford, in Essex, sweeping off every
 “week many of the inhabitants. This was a
 “fine opportunity for Mr. Sutton’s enemies to

* This has been done. Vide p. 237.

“ surmise, invent, and propagate what calumnies
 “ they pleased; especially as he sometimes came
 “ on market-days to treat with people who were
 “ inclined to be inoculated. If any person
 “ chanced to accompany him in his carriage, it
 “ was always industriously reported, that such
 “ person was a patient, brought to inoculate from
 “ or spread the disease. In consequence of these
 “ groundless insinuations and misrepresentations,
 “ an *indictment* was actually preferred last summer
 “ affize, against Mr. D. Sutton, surgeon, for a
 “ nuisance; but the grand jury would not find
 “ the bill against him.”

To the above succeeded “ *An Essay towards an*
 “ *investigation of the present successful and most general*
 “ *method of inoculation*, by B. CHANDLER, Sur-
 “ geon, at Canterbury.” This gentleman informs
 us, that a number of persons of all ranks had been
 inoculated at Canterbury, according to the *Sut-*
tonian plan, by Mr. Peale, a surgeon of eminence
 at Maidstone, and one of the partners of Mr. Sut-
 ton; and that in Mr. Peale’s absence, he had
 been by many desired to attend, so that by these
 opportunities, and by frequent conversations with
 Mr. Peale, he was enabled to carry the investiga-
 tion of the new practice farther than it had been
 done by Drs. Baker and Glass. Nay, he made
 trials of it upon great numbers at Chilham, and
 says his patients, in every stage of the Small-pox,
 were “ exact copies of Mr. Peale’s patients.”

His

His method of conducting the process of inoculation, and which he considers as being essentially the same with that of Mr. Sutton, is thus described:—" My patients have taken, if adults, a
 " dose of *calomel*, adapted to their age and strength,
 " at bed-time, and purged it off with Glauber's
 " salt next morning; this has been repeated to
 " the third time; at the intermediate distance of
 " two days from each. Children have sometimes
 " taken a purging powder, with *calomel*, three
 " times, of a morning only.—In regard to diet, I
 " have strictly forbade all animal and spiced food,
 " and all fermented liquors, not only through the
 " preparatory course, but in general through the
 " whole of the disease, constantly advising them
 " to return to their usual way of living gradually
 " and cautiously. On the day following the last
 " dose of physic, I have performed the operation;
 " which I do by wetting my lancet in the moisture
 " of the pustule, which rises on the arm of an
 " inoculated person, before the little feverishness
 " and general eruption appear; and then making
 " two very small oblique punctures with it in the
 " arm of the person to be inoculated, directing
 " the instrument not perpendicularly, but hori-
 " zontally, so as to divide the cuticle from the
 " cutis underneath; as soon as the least tinge of
 " blood appears, I wipe my lancet on the wound,
 " and make another puncture in the same man-
 " ner, immediately pulling down the sleeve, and
 " applying

“ applying neither plaster nor bandage. From
 “ this time I take care to keep my patients cool
 “ and open, advising moderate exercise in the
 “ *free air*, and giving to most, except very young
 “ children, two or three pills every other day, or
 “ thereabout, from the fifth after inoculation,
 “ composed of aloes, KERMES MINERAL*, and
 “ camphire. If the preparatory medicines have
 “ been inactive, these supply their place; if the
 “ patient has been irregular, these are as likely as
 “ any thing to correct the inconveniences which
 “ may arise from it. And as something wrong
 “ in the habit may often justly be suspected, when
 “ the punctures do not inflame so much as usual,
 “ I give the pills, in such cases, somewhat more
 “ freely. This is no new observation; it has
 “ often been experienced in the old inoculation,
 “ that those patients had the disease most favour-
 “ ably, whose inoculated arms discovered an
 “ earlier inflammation, a more considerable swell-
 “ ling, and a broader disk of surrounding redness.
 “ I do not pretend that these have any specific
 “ powers; indeed, I think they have not: but
 “ they are more commodiously carried about, and
 “ as easily taken as any other form of medicine.
 “ I have Boerhaave’s *sanction* for their use, and a
 “ strong probability of their being the same as
 “ Mr. Sutton’s: I have always seen them operate

* The Red sulphurated Oxyd of Antimony.

“ in the same manner, and answer every inten-
 “ tion equally well. From the seventh to the
 “ ninth day, I expect my patients to begin to
 “ complain a little; but some few entirely es-
 “ cape: then I give NITRE, dissolved in a decoc-
 “ tion of oats, *acidulated* with LEMON JUICE, or
 “ weak SPIRIT OF VITRIOL*, *ad libitum*. This
 “ cooling liquor is agreeable to the palate, as-
 “ suages their thirst, if they have any, and for the
 “ most part proves a little sudorific, if taken at
 “ bed-time. In a day or two from their first be-
 “ ginning to complain, the pustules seldom fail to
 “ appear immediately, upon which all sickness
 “ vanishes, and I have never heard one complaint
 “ afterwards.”—

Mr. Chandler, after a very minute examination
 of Mr. Sutton's practice, concludes, that the suc-
 cess of this celebrated inoculator does not prin-
 cipally depend upon his *mercurial* preparation,
 nor yet upon the free exposure of his patients to
cold air, as alledged by Sir George Baker. *Sweat-*
ing the inoculated, he asserts, Mr. Sutton never
 attempts, and therefore ascribes but little efficacy
 to what has been called the *punch*; the *pills* he
 thinks useful merely as evacuants, not as possessing
 any *specific* power; whence he cannot impute the
 chief advantage of the Suttonian system of inocu-
 lation to any of the above causes. In short, the

* Vitriolic Acid,

grand secret in the new mode of inoculation, Mr. C. says, is "*the taking of the infecting humour in a crude state, before it has been, if I may allow the expression, ultimately variolated by the succeeding fever.*"

Thus it appears, that the three first persons who investigated the Suttonian practice of inoculation, all differed in opinion respecting the most essential point of it; successively ascribing its superior success to the more free use of *cold air*, to *sweating*, and to *inoculating with crude uncocted variolous matter*.—And here I may add, that Baron Dimsdale, who immediately afterwards gave his sentiments on this subject, says, "Should it be asked then, To what particular circumstances the success of Sutton is owing, I can only answer, that although the whole process may have some share in it, in my opinion it consists chiefly in the method of inoculating with *recent fluid matter* *."

The grand secret has at last transpired in a work called the *Inoculator*, published by D. Sutton himself, in which he has unveiled the whole mystery. Here it will be found that less depends upon the variolous matter*, than upon an alterative powder abounding in oxygen.

* He, however, recommends the recent fluid matter, as being more certain, and as producing an earlier eruption of the pustules, generally of a kinder sort.

Sutton's alterative powder he openly declares to be

Antim. calcin. lot.*—dr. 10.

Calomel.†—dr. 8.

Antim. tart. ‡—dr. 2.

M.

That is,

Take of Calx of antimony—ten drachms.

Calomel—eight drachms.

Emetic tartar—two drachms.

This powder he directs to be kept in a wide-mouthed vial, with a gauze covering only; and it will be found to answer better after it has stood a month, or six weeks, before using, in order that it may imbibe more oxygen. Of this twelve grains is a dose for a grown-up person. This is his grand alterative powder, on which, he says, he places his highest dependence. It is given, in currant jelly, every night. The patient having taken the medicine, is ordered immediately to get into bed, in order that it may rest upon the stomach. It is not unusual, however, says Sutton, for the first, and sometimes the second *alterative powder*, to cause a slight sickness and vomiting. Afterwards it seldom has this effect; nor do I wish it, says he, to produce any other effect, than to cause a laxative motion towards morning. After the third morning, I gently purge with Glauber's

* Tartrite of antimony.

† Oxyd of mercury.

‡ Oxyd of antimony.

salts *, or rhubarb and jalap. The patients are kept upon a *vegetable diet*, and the quantity of food restricted. The purging powder, so as to give three or four evacuations, should be repeated every other morning. Nor is there, adds Sutton, any, the least danger to be apprehended, that the patient can be reduced so low as not to have strength enough to throw out the Small-pox. The fact is, the fewer are produced, the less the constitution will have to struggle with ; and this depends upon following the plan here laid out, from an infinite experience of above forty years.

* Sulfate of pot-ash.

PRACTICAL OBSERVATIONS.

SECT. XLV.

THE MEASLES.

THE poison of the Measles differs greatly from that of the small-pox and whooping-cough, exerting its influence for a much shorter period on the human body, the whole disease being gone through in a few days: and whereas the whooping-cough seems chiefly to effect the stomach, so this, like the small-pox, affects the surface of body, as also the *lungs*, and its characteristic symptom is the *suffusion of water in the eyes* *. Sydenham observes, that by an improper treatment, the eruption, which should resemble flea-bites, bring small *red spots*, turn *purple or livid*, and sometimes *black*. The wish of forcing out the eruption, or what was thought the expulsion of the morbid matter, has destroyed its thousands in this disease, as well as in the small-pox. As its duration is shorter than either of these disorders, and its violence greater, the most decisive remedies should

* Inoculation has been performed with this water, drawn from the eye, and with great advantage. It is a pity so salutary a practice should be so soon and easily abandoned.

be speedily employed. Dr. Brown conceived
 “ that all diseases were the action of stimuli on the
 “ excitability or living principle of the body; for
 “ none of the stimuli act on the dead body *; and
 “ that the province of the physician was to manage, in return, the quantum of action in the
 “ system. Thus, when added to the natural stimuli,
 “ a foreign, or poisonous one, was exerting its influence, the sum of the two powers was a state
 “ of too strong excitement; and as the foreign
 “ power could not be removed, the art of physic
 “ was therefore to remove the natural stimuli, so
 “ as to make the sum of stimuli not destructive to
 “ the living powers.” Here this great improver of
 the practice of medicine was right, provided we
 had no means of attacking the nature of the poison itself; and hence the important advantages
 derived to medicine from the Brunonian practice,
 as it is called.

Mead, speaking of the advantages of bleeding, says, in commendation of it: “ I am afraid, lest I should seem vainly to court applause by the following narration; yet it is so much to the purpose, and so happily confirms what I have said, that I must beg leave to relate it. About forty years ago, the Measles raged with so great violence in this city, that it proved more fatal than even the small-pox. At that time a phy-

* Thus a blister will not rise on the dead body.

fician of great eminence came to me, desiring that I would inform him what method I followed in this disease. I asked him, whether or not he used to take away blood? He answering no, because Sydenham very seldom did it; I advised him to open a vein in the beginning of the distemper; or, if he was called in later, as soon however as he possibly could: for, said I, this disease always brings with it a peripneumony, which he very well knew ever required bleeding. Not long after he met me again, returning me hearty thanks for my counsel, assuring me, that he had not lost *one patient* whom he had treated in this manner."

Mead adds: "The supposition that the emptying of the vessels would hinder the coming out of the eruption, is a popular error, as daily experience evinces; but it is this *prejudice* that will give room for many to find fault with my practice, and hinder my reputation in life: yet I am happy if I shall have proved myself, in any way, beneficial to my fellow creatures. *This is all I desire; for the consciousness of having done right is beyond all praise, especially of the vulgar, and carries with it its own reward, which he abundantly enjoys who consults the good of his fellow creatures, and, by his actions, shews that he thinks he is*

Non sibi, sed toti genitum se credere mundo *."

LUCAN.

* That he is not born for himself, but for the whole world.

I have frequently used small doses of *antimonial wine*, as twenty or forty drops, repeated it every two or three hours, and until it produced either vomiting, purging, sweating, or all three, which evacuate plentifully, and the disorder is readily subdued ; or has the *oxyd* any particular specific power in this disease ?

The Measles, if badly cured, when violent, often ends in diseases of indirect debility, as pulmonary consumption, or water in the chest : both which diseases afterwards will be considered.

THEORETICAL AND PRACTICAL OBSERVATIONS.

SECT. XLVI.

OF THE AGUE, OR INTERMITTENT FEVER.

THE question, whether *putrid marshes* are, or are not, unwholesome, is of considerable moment; Dr. Priestley, therefore, by a clear and conclusive experiment, first proved, that the vapour which arises from putrid water is exceedingly noxious, and thus guards us against the mischief which might otherwise proceed from a careless belief of the opposite opinion. "Happening," says he, "to use at Calne a much larger trough of water, for the purpose of my experiments, than I had done at Leeds, and not having fresh water so near at hand as I had there, I neglected to change it, till it became offensive, but by no means to such a degree as to determine me from not making use of it. In this state of the water, I observed bubbles of air to rise from it, and especially in one place, to which some shelves, that I had in it, directed them; and having set an inverted glass

vessel to catch them, in a few days I collected a considerable quantity of this air, which issued spontaneously from the putrid water; and putting nitrous air to it, I found that no change of colour or diminution ensued, so that it must have been in the highest degree noxious."

The celebrated Dr. Franklin has likewise pointed out the pernicious effects of air from *stagnant waters*. Speaking of the flame which may be lighted up on the surface of some waters in America: "I have frequently," says this excellent philosopher, "tried the experiment in England. One day being employed in stirring up the stagnant water at the bottom of a deep ditch, I was seized soon after with an intermitting fever, which I can ascribe to no other cause than to my breathing too much of that foul air which I stirred up from the bottom, and which I could not avoid while I stooped in endeavouring to kindle it."

An east wind in England is often accompanied with a fog, which it is said to bring with it from the sea: but the truth of the matter is, that this wind then raises a copious vapour from water, mud, and all marshy or damp places.

I do not remember to have met with any observations on this exhaling quality of the easterly wind, says Dr. Lind, though I have been an eye-witness to it. When the wind changes to the east, the mud sometimes sends up a vapour as thick as smoke.

smoke. Two fish ponds in my neighbourhood, one of fresh, the other of salt-water, upon the approach of an easterly wind, sometimes also emit a dense vapour, as from a pot of boiling water.

In order to view this phænomenon distinctly, the person should stand at about 100 yards distant from the ponds. If the sun shines, when the wind changes to the east, he will observe a constant stream of vapours rising out of the ponds, from about five to ten yards height, while the air about him remains serene. As the vapour or fog arising from other places glides along the surface of the earth, and is brought by the easterly wind to the ponds, he will still be able, for some time, to distinguish the vapours ascending perpendicularly out of the ponds, from those which are carried in an horizontal direction by the wind; especially if the sun continues to shine, though faintly.

This evaporating quality of an east wind, seems to manifest itself also by its effects, both on the thermometer, and the human body. A thermometer, hung over a damp piece of ground, during the fogs or exhalations arising from it, will often indicate a degree of cold below the freezing point. There is also a chillness of the body, sensibly perceived in this situation, nearly the same as that arising from the wet floor of a chamber.

But

But winds are not constant in their effects : as we have sometimes warm weather with a north wind, and sometimes very little heat with a wind from the south ; so the fogs attending an east wind are not constant ; neither is the evaporation which we have mentioned at all times to be perceived.

I am perfectly sensible, that there may be a deception in these matters, and that, instead of supposing the quantity of vapours exhaled to be increased by an easterly wind, the coldness of that wind may be supposed only to condense and render visible the vapours in the air at that time. But even this supposition is liable to great objections, as our coldest north winds seldom or never produce such an effect, but are commonly attended by serene dry weather.

Let that be as it will, an east wind is usually accompanied by a cold, damp, and unwholesome vapour, which is observed to affect both animal and vegetable health, and in many places to give rise and obstinacy to intermitting fevers, as also to produce frequent relapses.

In particular spots of the low damp island of Portsea, the ague frequently prevails, and sometimes the flux, during the autumnal season ; in some years they are much more frequent and violent than in others. It is observable, that their attack proves always most severe to strangers, or those

those who have formerly lived on a drier soil, and on a more elevated situation, from not being habituated to this poison.

The year 1765 was remarkable, not only for the long continuance of easterly winds, but also for an excessive degree of heat, which produced a more violent and general rage of those diseases, than had been known for many years. During the months of May, June, and July, we had seldom fewer at Haslar-hospital, continues Dr. Lind, than thirty or forty patients, labouring under regular tertian agues, with perfect intermissions. Of these, some were seized on board the guardships that lay in the harbour near the mud, but the greatest number were marines, who did duty at Portsmouth.

In the month of August the quicksilver, in Fahrenheit's thermometer, often rose to eighty-two degrees in the middle of the day. This heat, together with the want of refreshing rains, spread the fever, increased its violence, and in many places changed its form. At Portsmouth, and throughout almost the whole island of Portsea, an alarming continual, or remitting fever, raged, which extended itself even as far as Chichester. At the same time the town of Gosport, on the opposite side of the harbour, though distant only one mile from Portsmouth, enjoyed an almost total exemption from sickness of every kind; and in the neighbouring villages and farm-houses

on that side, only a mild regular tertian ague prevailed, which however distressed whole families. The violence of the fever, with its appearances in a continued remitting or intermitting form, marked, in some measure, the nature of the soil. In Portsmouth its symptoms were *bad, worse* at Kingston, and *still more dangerous and violent*, at a place called Halfway-houses, half a mile from Portsmouth, where scarcely one in a family escaped this fever, which there generally made its first attack with a delirium. In the large suburb of Portsmouth, called the Common, it seemed to rage with more violence than in the town, some few parts excepted; but even whole streets of this suburb, together with the houses in the Dock-yard, escaped it.

The marines, who were three times a week exercised early in the morning on South-Sea Beach, from the effect of the stagnant water of an adjoining *marsh*, suffered much. Half a dozen of them at a time were frequently taken ill in their ranks, when under arms; some were seized with such a giddiness in the head, that they could scarcely stand; others fell down speechless, and upon recovering their senses, complained of a violent head-ach.

When such patients were received into the hospital, some few had a regular ague, but far the greater number laboured under a remitting fever, in which sometimes, indeed, there was no perceptible

ceptible remission for several days. A constant pain and giddiness of the head were the most inseparable and distressing symptoms of this disease. Some were delirious, and a few vomited a quantity of bile; in all, the countenance was yellow.

A long continuance of the fever produced either a dropsy, or a jaundice, or both; even a slight attack reduced the most robust constitution to a state of extreme debility; which, together with the giddiness, continued long after the fever.

The universality of this fever, together with its uncommon symptoms, were at first alarming; but when the lancet was withheld, and the bark freely given in large doses, few died*. It decreased with the heat of the weather, and in the winter appeared chiefly under the form of a quartan ague.

This may suffice for a brief description of the autumnal fever of Great Britain, which in its utmost violence prevailed in 1765, not only in Hampshire, but in many other parts of this island, and which seemed to have been increased that

* When the head-ach or giddiness were very violent, and the pulse neither full nor strong, I ordered, says Dr. Lind, (to whom the world owes so much for improvement in medical knowledge) a blister to the back, and endeavoured to reduce the fever into an intermitting form, by giving half a grain of *tartar emetic* (antimonial tartrate of pot-ash) with a few grains of *nitre*, every six hours, which usually succeeded.

year, by the unusual and excessive heat of the summer, together with an undiluted putrid moisture in the soil, and the long duration of easterly winds.

In looking over ancient authors, I find the cure of intermittents was by regularly abstaining from food for five days, and afterwards eating and drinking to excess. Celsus, who improved upon this barbarous practice, advises only three days abstinence, and a cautious return to a full diet.

Before the discovery of the bark, the cure of agues was generally attempted by bitters, such as *chamæmelum*, *centaurium minus*, *gentiana*, *cortex aurantiorum*, *zedoaria*. These bitters, together with fixed alkaline salts, are still in great esteem with some physicians, who entertain prejudices against the bark; all which, it is to be hoped, will soon be removed.

Opinionum commenta delet dies.

It is curious to observe with what diffidence *bark* was formerly employed in the cure of agues. The great Dr. Willis, speaking of this medicine, says, concerning the Peruvian bark, "because of late it hath begun to be in use, there are some things to be said, which offer themselves to common observation. The common manner of exhibiting this is, that two drachms of it, beaten to powder, be infused in sack or white wine, in an open glass, for two hours, and then, upon the coming of the fit, the patient being put

put to bed, that the liquor and powder be drunk up. This potion often takes away the approaching fit, yet oftentimes, though taken after the wonted manner, it prevents the next; however, either in the first, second, or third period, the fit is inhibited, and the disease *seems* to be cured, it is often wont to return, within twenty or thirty days; then this powder, being again exhibited, the disease is *for a time deferred* about the same space, and by this means I have known many, sick of a quartan, to have suffered some few fits only, a whole autumn and winter, and so to have *detained* the enemy in his precincts, till the spring coming on, the disposition of the blood is altered for the better, by the help of the time of the year, and of other physic, and so this distemper vanishes by degrees. Those, who by this means, have procured the frequent truces of the quartan, have lived cheerful, lively, and ready for any business, when otherwise, being weak and pale, they were brought into languishment, and a vicious habit of body: scarce one of an hundred hath tried this medicine in vain, yea, if but half, or a lesser quantity, viz. the weight of but one drachm, taken, it very often takes away the fits, and *suspends* the same, a shorter space only; neither is it any matter, whether it be taken in strong or small wine, unless with the respect to the disposition of the sick: because in a more hot temper, it may be profitably taken in distilled water,

water, or whey ; also a clear infusion of it, the more thick substance being cast away, produces the like effect, but of shorter durance : I have taken care to reduce this powder into pills, with the mucilage of tragacanth, with a little cost to the sick, to be given to some ; after what manner soever it is taken, unless to those loathing and abhorring every medicine, it causes no manifest evacuation, and takes away the fit, almost from all ; neither is it only in a quartan fever, but in the other kinds of intermitting fevers, to wit, in every one where there is any remission coming between, given with good success. It is commonly ordered, that a gentle purge should be taken before this, but in some who are very weak, and keep their beds, this powder being taken carefully, without any previous medicine, hath produced laudable effects. In the mean time, I will *ingenuously confess*, that I have not seen an intermitting fever *quite cured* by this bark, once taken : nay, rather the fits not only of a quartan, but of a tertian and quotidian fever, wholly overcome easily by other remedies, seeming to be driven away by this powder, have *constantly returned* after a short time. *For this reason, they who suppress intermitting fevers, otherways easily curable, no necessity urging them, by this medicine, for a little while, only seem to institute a deceitful medicine, and do no more than those who skin over a rotten ulcer, which will shortly break out again ; in truth, in some cases,*

the

the use of this will be requisite, viz. when by the too great assiduity of the fits, the spirits of the sick are cast down. truces are by this means procured, by which nature may recollect herself, and afterwards may be more able to fight against this potent enemy: also, that a quartan fever, during the autumn and winter, may pass over with little trouble, this bark is profitably administered: but those, who expect a longer resting time, from the assaults of this fever, are bid to take this powder in greater quantity, and more often, to wit, that they should take two drachms, three several times one after another, whether the fits return or no; by this means they remain longer free, *yet they retain within the enemy still, though asleep."*

The early exhibition of bark we see then was thought only to put this disease *asleep*, and *injurious*, by preventing the expulsion of the morbid matter. Sydenham first rooted out this error.

Modern physicians perceive, that though like other astringents, it braces the fibres, and as it often produces vomiting, or nausea, that it must act as a stimulus, yet the effect of this is chiefly by giving an increased power in the blood to imbibe OXYGEN, whereby this fever is cured.

Those who have had much practice in marshy countries, have seen that when *steel* *, which renders

* Monf. de Haller conjectures, that the iron which is found in the earthy parts of the blood, is particularly connected with
the

ders the blood still more attractive of OXYGEN has been conjoined with *bark*, the effects are in proportion great, often conjointly overcoming the disease when the bark alone has failed *.

the *red* particles, and this conjecture of his appears to be founded in truth, if we may believe the experiments of Professor Buckwald at Copenhagen. Buckwald took a quantity of the white part of the crassamentum from which the *red* particles had been entirely washed off, and calcined it, along with a certain portion of fixed alkaline salt; than he dissolved this mass in water; and lastly, added a solution of alum; but the colour was not changed by this addition of the alum. He then calcined a quantity of *red* crassamentum along with fixed alkaline salt, and having dissolved the mass, added a solution of alum. This immediately turned *blue*, and yielded a portion of the blue pigment, called Prussian Blue, which is a sure test of the presence of *iron*; hence Dr. Buckwald concludes, that the red colour of blood is chiefly owing to a mixture of ferruginous matter. The deterioration of the air with persons labouring under ague, is much smaller than when cured, especially after taking steel. The florid red of the cheeks is another proof this position.

* This is the famous electuary of Penrose, so much prized in Lincolnshire and Cambridgeshire, and may be made as follows :

R. Cinchon. pulv. unc. 1.

Rubig. Ferri. dr. 2.

Pulv. aromat. dr. 1.

Conf. cort. aur. unc. $\frac{1}{2}$.

Syr. zingib. q. s.

F. elect.

Cap. magnitud. nuc. moschat. omni b. hor.

That is, take of

Powdered bark, one ounce.

Rust of iron (carbonat of iron) two drachms.

Aromatic powder, one drachm.

Conserve of orange peel, half an ounce.

Syrup of ginger, as much as is sufficient.

Make this into an electuary, and take the size of a nutmeg of it every two hours.

In

In the cure of Mary Rhodes, the power of OXYGEN air, in conjunction with *bark* and *steel*, was very striking. This patient had been to see some friends in Essex, and returned with an ague. Living with her father, who was a bookbinder, and being by trade a folder of the printed sheets, she was constantly engaged with damp paper, and her disorder, probably from this cause, resisted for two years, what has been long deemed the *specific bark*. Being at length advised to come under the care of Dr. Thornton, he ordered her to inhale twenty quarts of *vital air*, mixed with twice that quantity of atmospheric, and previous to the time of the accession of *tertian* to take thirty drops of tincture of opium, with twenty of ether, in some cold porter. A strong decoction of liquorice was also drank warm, and the cold fit was nearly prevented, and a powerful perspiration ensued. The *bark* with *steel* was immediately after administered, and the OXYGEN air continued, and the patient had no more paroxysms, and was soon restored to health.

Mr. Bush, a watch-maker, in Wood-street, had an ague that for six weeks resisted bark under Mr. Chamberlin. He applied to Dr. Thornton, who ordered him to come to him half an hour before the expected paroxysm. He was bound tight in slips of flannel of considerable extent, for half an hour, when he had a yawning, and all the symptoms of the approaching fit. After this

this he was liberated, took thirty drops of laudanum, and fifty of ether, in some port wine, and then inhaled twenty quarts of *vital air*, mixed with thirty of atmospheric; and now feeling extremely warm, he walked home, and had no fit then, or afterwards. The bark however was continued.

Dr. Thornton has cured several agues simply with the different *acids*. From many instances we can adduce the following:—

Charles Davis, living at No. 1, Great Titchfield-street, plasterer, went into the Hundreds of Effex, where he was seized with a remittent fever immediately after harvest, (common to that part of the country at that season of the year) and the ague which followed continued even after his return to London, which was a tertian. Previous to the coming on of the paroxysm, he took the juice of a lemon every two hours, with fifteen drops of the diluted vitriolic acid, and his ague ceased immediately. Bark was had recourse to at the end of a week, to prevent a return.

Hoffman mentions, that in obstinate quartans, he has repeatedly cured by *calomel*, carried even so far as to produce salivation.

The numberless charms employed for ague, seem to act upon the same principle, *hope* powerfully disposing the blood to imbibe OXYGEN, as will be seen when we come to treat on scurvy.

Hence it is, that a change of *air* is frequently the most effectual means of obtaining a cure:
the

the most obstinate intermittent I ever had occasion to see, was removed by a change from the land to the sea air; the patient never had one fit after being sent on board a ship.

But the remedy lately found to be superior to every other, is the OXYD OF ARSENIC. It comes sanctioned to us by the recommendation of Drs. Fowler, Arnold, Withering, Willan, Marsh, and Pearson.

Mr. Jenner, of Painswick, in Gloucestershire, relates, that he had cured more than 200 intermittents with it.

The form recommended by Dr. Fowler is,

R. Arsenic alb.

Sal. alk. veget. fix. aa. gr. 64.

Aq. distil. lb. $\frac{1}{2}$.

Immittantur in ampullam, quâ in balneo arenæ positâ, aqua lente ebulliat, donec arsenicum perfectè solutum fuerit; dein solutioni frigidaë adde,

Sp. lavend. comp. unc. $\frac{1}{2}$.

Aq. distil lb. $\frac{1}{4}$.

Dosis gtt. 10 bis die ad. gtt. 20 ter die.

That is, take of

White arsenic, and

Fixed vegetable alkali, equal parts,
sixty-four grains.

Distilled water half a pound.

Let these be put into a jug, placed upon a

sand bath, and gently boil, until the arsenic be perfectly dissolved, and when cold, add to it,

Compound spirit of lavender, half an ounce.

Distilled water, half a pound.

The dose is ten or twenty drops, twice or thrice a day.

An ague, if not cured, leaves the patient in the state of the greatest indirect debility, and often obstructions of the viscera ensue, and dropsy or jaundice, from general debility.

Such dropsies are to be cured by exciting a gentle action of mercury with squills, thus

R. Pil. e scilla, gr. 10.

Pil. ex hydr. gr. 4.

F. pil. 3. alternis noctibus sumend.

That is, take of

The squill pill, ten grains.

The mercury pill, four grains.

And make them into three pills, to be taken every other night.

And, in the intermediate days, the following mixture is to be taken :

R. Aq. pulegii simp. unc. 5.

Aq. Raphani comp. unc. 1.

Kali acetat. dr. 1.

Oxymel scill, unc. $\frac{1}{2}$.

M. cap. unc. $\frac{1}{2}$ 4tis horis.

That

That is, take of

Pennyroyal water, five ounces.

Compound horse-radish water, one ounce.

Acetated kali, one drachm.

Oxymel of squills, half an ounce.

Mix, and take half an ounce every four hours.

When the water has been removed, the system must be afterwards fortified with bark and steel.

ORIGIN OF PUTRID FEVER.

SECT. XLII.

FIRST CAUSE, OR SELF-GENERATION OF PUTRID FEVER.

HOWARD, who visited all Europe and the East, not, as Mr. Burke beautifully expresses it, to survey the sumptuousness of palaces, or the stateliness of temples; not to make accurate measurements of the remains of ancient grandeur, nor to form a scale of the curiosity of modern arts; not to collect medals, or to collate manuscripts; but to dive into the depth of dungeons; to plunge into the infection of hospitals; to survey the mansions of sorrow and of pain; to take the gauge and dimensions of misery, depression, and contempt; to remember the forgotten; to attend to the neglected; to visit the forsaken; and to compare and collate the distresses of all men, in all countries. His plan is original; and it is as full of genius as it is of humanity. It is a voyage of discovery, a circumnavigation of charity; and already the benefit of his labour is felt more or less in every country.

This

This benevolent man, who went about visiting prisons, and relieving the afflicted, speaking of the putrid, or jail-fever, says, " If it were asked me, what is the cause of this disease? I should not answer, a want of cleanliness ; for I have found in some prisons, cells, and dungeons, as offensive and dirty as any I have observed in this country, where, however, this distemper was unknown ; I am obliged to look out therefore for some other cause of its production. This, in my opinion, arises from want of proper ventilation, and the *corruption of the fluids*. Our convicts are ironed, and thrust into close offensive dungeons, and there chained down, some of them, without straw, or other bedding ; in which they continue, in winter, sixteen or seventeen hours out of the twenty-four, in utter inactivity, and immersed in the noxious effluvia, exhaling, and not carried off from their own bodies ; on this account, the jail-fever is always observed to reign more in our prisons during winter than in summer ; contrary, I presume, to the nature of other putrid diseases. Their diet, at the same time, is low and scanty, and they feel this change the more severely, being before accustomed, generally, to free diet, tolerable lodgings, and vigorous exercise, and the fluids cannot fail soon to degenerate under so many causes of sickness and despair.

Let me draw the sketch only of a single captive. It is taken from the life. I had to look through the twilight of his grated door to take his true features.

I beheld his body half wasted away with long expectation and confinement, and felt what kind of sickness of the heart it was which arises from hope deferred.—Upon looking nearer, I saw him *pale* and *wan*:—in thirty years the western breeze had not once warmed his blood—he had seen no sun, no moon in all that time—nor had the voice of friend or kinsman breathed through his lattice:—his children—but here my heart began to bleed—and I ~~am~~ forced to go on with another part of the portrait. He was sitting upon the ground upon a little straw, in the furthest corner of his dungeon, which was alternately his chair and bed; a little calendar of small sticks were laid at the head, notched all over with the dismal days and nights he had passed there—he had one of these little sticks in his hand, and with a rusty nail he was etching another day of misery to add to the heap. As I darkened the little light he had, he lifted up a hopeless eye towards the door, then cast it down—shook his head, and went on with his work of affliction. I heard the chains upon his legs, as he turned his body to lay his little stick upon the bundle—He gave a deep sigh—I saw the iron enter into his soul—I burst into tears—

This

This is too faithful a picture of every prisoner, some few excepted, who appear totally devoid of feeling. Hence it is, says Howard, and I speak from my own observations, during many successive years, that more die of the jail-fever than by the arm of the executioner.

The history of the Boullam fever, as it has been called, is a striking instance of a self-generated fever.

The Hankey sailed from England, in company with another ship, both chartered by the Sierra Leone company, loaded with stores and adventurers, for the projected colony at Boullam, about the beginning of the month of April, 1792. When these ships sailed, and during the voyage out, the crews and settlers were all healthy; and as the latter were in general of the middling class of people, and appeared to be induced to settle in this new country, more from the delusive prospect of wealth held out to them, than by any deprivation of the means of subsistence in their own country, no suspicion whatever can be entertained of the existence of latent infection among them; nor can marsh effluvia be supposed as the origin of the disease which afterwards swept off so many of those unhappy people. Boullam, being surrounded by the sea, enjoys all the advantages of the sea-breeze; and being dry, and not incommoded by any marshy tracts, it is considered as the healthiest spot on the windward coast.

coast *. It is not inhabited, but occasionally visited by the natives of the adjoining continent, who have small scattered patches of millet on it. It is, however, destitute of fresh water ; and that, procured by digging temporary wells on the beach, is brackish, and consequently unwholesome. The negroes of this part of Africa are ferocious in an extraordinary degree ; and are even said to be cannibals. This circumstance preventing the erection of any sort of accommodation on shore, during the nine months the Hankey lay

* This part of Africa is allowed, by all who have visited it, to be uncommonly healthy and pleasant. I have conversed with several intelligent captains of slave-ships, who have uniformly agreed in this point : and indeed the appearance of the slaves brought from the windward coast, part of which this is, constitutes a convincing proof of the salubrity of the climate. Many travellers have given their testimony to this effect : the Chevalier de Marchais, in particular, is very full of its praise : “ *Le lit de cette riviere (Sierra Leona) renferme quantité d’îles d’un terrain parfaitement bon, gras et profond qui produit de lui-même et presque sans culture tout ce qui est nécessaire à la vie—Mais ce qu’on ne sçauroit estimer assez, c’est que l’air y est très pur, et qu’on n’y est point sujet à ces maladies violentes et dangereuses qui regnent à la Côté de Guinée et qui ont fait perir tant d’Européens.*” See *Voyage du Chev. Des Marchais en Guinée et îles voisines*, par le R. Pere Labat. tom. I. p. 58.—Dr. Lind also speaks favourably of those islands, and the adjoining continent. *Diseases of Hot Climates*, p. 56. Capt. Norris, in his *African Pilot*, lately published, the most correct thing of the kind I ever saw, lays down Boullam in lat. N. 11 ; and long. W. from Farro, 3 ; almost in the mouth of Rio Grande, having Hen Island between it and the ocean. It appears to be nearly circular, about 15 miles long, and 15 broad ; and consequently about 45 round.

there

there, the settlers were obliged to live on board ; and the rainy season coming on almost immediately after their arrival, and the heat being at the same time excessively great, they endeavoured to shelter themselves from both, by raising the sides of the ship several feet, and covering her with a wooden roof.

Among upwards of two hundred people, of whom women and children constituted a part, thus confined in a sultry moist atmosphere, cleanliness could not be well attended to, however well-inclined the people themselves might be. These circumstances, joined to the depression of mind consequent upon their disappointment, must certainly be considered as the *causes* of the malignant fever which broke out among those unfortunate people, sometime after their arrival at Boullam *. And no doubt can be entertained, that neglecting to sweeten the ship, to ventilate her afterwards, and to destroy the clothes, bedding, &c. of those who died on board, was the sole cause of her retaining the seeds of infection when she arrived at this port. The following facts will serve to illustrate this : Capt. Coxe, finding the water at Boullam unwholesome, proceeded with his ship to *Bissao*, where there is a Portuguese settlement, for a supply. The ship was navigated by about twelve seamen, most of whom

* Such is the origin of the jail-fever, according to Howard. Vide p. 265. It is here we deliver the opinion of Dr. Chisholm.

had not experienced sickness, and had been probably procured from Sierra Leone : at any rate they were then taken on board for the first time. Of these, before the return of the Hankey to Boullam, *nine* died ; and the remainder were reduced to a deplorable state.

The time for which the Hankey was chartered being expired, Mr. Paiba, with his family, intended to return to England in her ; but as no seamen could be procured, they were obliged to proceed to sea, having on board the captain sick, and only the mate, Mr. Paiba, and two seamen to navigate the ship. With much difficulty they arrived at *St. Jago*, where they fortunately found the *Charon* and *Scorpion* ships of war. Capt. Dodd, of the former, humanely rendered them every service in his power ; and, on leaving them, put two men of each ship on board the Hankey. With this aid they proceeded to the West-Indies ; a voyage to England being impracticable in their wretched state. On the third day after leaving *St. Jago*, the men they procured from the ships of war were seized with the fever, which had carried off three-fourths of those on board the Hankey at Boullam ; and having no assistance, two of the four died : the remaining two were put on shore here in the most wretched state possible. Capt. Dodd, on his arrival at Barbadoes from the coast of Africa, was ordered by Admiral Gardener to
convoy

convoy the homeward-bound fleet of merchantmen. In the execution of his orders, he came to Grenada on the 27th of May, and hearing of the mischief which the Hankey had been the cause of, mentioned that several of the Charon's and Scorpion's people were sent on board the Hankey at St. Jago, to repair her rigging, &c. that from this circumstance, and the communication which his barge's crew had with that ship, the pestilence was brought on board *both ships*; and that of the Charon's crew *thirty* died; and of the Scorpion's about *fifteen*. The Hankey arrived at the Port of *St. George* on the 19th of February, in the most distressed situation; and for a few days lay in the Bay, but was afterwards brought into the Carenage *.

From

* Our Lieut. Governor, Ninian Home, Esq. sometime after the disease became epidemic, informed me, that in consequence of the information he had received of the clothes, &c. of the victims of the fever at Boullam being still on board the Hankey, he ordered Capt. Coxe to be brought before him and some gentlemen of the council, &c. He then acknowledged that all the effects of those who had died were then on board his ship; and said, that he would not destroy them, unless he was *indemnified* for the loss he might sustain, should the heirs of the deceased call on him for those effects. Every argument was used to induce him to destroy the articles, but the only one which influences a man of this description, *Indemnification*; and he of course carried the seminium of the disease to England when the Hankey sailed with a convoy in July. Mr. Hume was so impressed with the idea of the danger Capt. Cox's conduct might be productive of on the arrival of the ship in England, that he wrote

From this period we are to date, says Dr. Chisholm, the commencement of a disease before, I believe, unknown in this country, and certainly unequalled in its destructive nature.

—Nova pestis adest: cui nec virtute resisti,
Nec telis, armisve potest——— OVID.

The manner in which this disease was first communicated, and its subsequent progress, too clearly evinced its malignant and pestilential nature.

A Capt. *Remington*, an intimate acquaintance of Capt. Coxe's, was the first person who visited the Hankey, after her arrival in St. George's Bay. This person went on board of her in the evening after she anchored, and remained three days; at the end of which time he left St. George's, and proceeded in a Drogher * to Grenville Bay, where his ship, the *Adventure*, lay. He was seized with the malignant pestilential fever on the passage; and the violence of the symptoms increased so rapidly, as, on the third day, to put an end to his existence.

The crew of the *Defiance*, of Blythe Port, near Newcastle, were the next who suffered by visiting

wrote to the Secretary of State, stating the danger. Proper notice of this representation was taken by Government; for the Hankey was obliged to perform quarantine; or perhaps we might have had the same fever in England, and a *second plague*.

* A coasting vessel,

this

this ship: the *mate*, *boatswain*, and *four sailors*, went on board the day after her arrival: the *mate* remained either on deck or in the cabin, but the rest went below, and staid all night there. All of them were immediately seized with the fever, and died in three days. The *mate* was also taken ill, but, probably from his having been less exposed to the virulence of the infection, he recovered.

The crew of the ship *Bailles*, from the same imprudent civility or curiosity, were the next who suffered. These communicated the infection to the ships nearest them; and it gradually spread from those nearest the mouth of the Carenage, where the *Hankey* for some time lay, to those at the bottom of it; not one escaping, in succession, whatever means the captains took to prevent it; even the smell and smoke of coal-tar, which is uncommonly pungent and penetrating, had no effect as a preventive; for the *Hope* of London, then careening, and having her bottom paid with this bitumen, received the infection as extensively as the others.

In the short space of time from the beginning of March to the end of May, 200 of about 500 *sailors*, who manned the ships in the regular trade, *died of this fever*. If to these we add, those who suffered on board *Guinea-ships*, and other transient vessels, the number cannot fall short of 250; which

which is nearly one in three, or a third of all the sailors during about ten weeks in harbour.

From the beginning of June till the middle of August, when the disease had nearly disappeared, the number of sailors was considerably diminished, by two fleets having sailed for Europe, but the mortality was proportionably great. Although so great a mortality naturally leads us to form a dreadful idea of the virulence of the *contagion* which gave rise to it, it must not remain unconsidered, that the predisposition of the class of men among whom it happened, was very great. The sailors were men from the age of fifteen to fifty; and the circumstances which appeared to predispose them more strongly than other men to the action of the contagion, were violent exercise in the sun; the immoderate use of undiluted new rum; bathing in a state of intoxication, and often when violently heated; sleeping on deck during the night. All the causes of direct, or indirect debility, predispose to catch the infection of contagious fever. Fear has a remarkable effect this way. Other circumstances which did not depend so much on their own prudence, no doubt, contributed very much to give the disease so very fatal a tendency; the damp heat between decks; the excessive filth of most of the ships; and the uncleanly state of the persons and clothes of the men themselves.

About

About the middle of April the disease began to appear on shore. The first house it showed itself in, was that of Messrs. *Stowewood and Co.* situated close to the wharf; and the infection was evidently introduced by a negro-wench, who took in sailors clothes to wash. The whole of the family were successively afflicted with it; and by them communicated to all those with whom they had any intercourse. The difference of living, and the being more apart, disposing them to be less acted on by the contagion, with the superior care and attention to cleanliness, rendered the fever infinitely milder when it appeared among the inhabitants. The manner, however, in which it spread in town, clearly evinced its *contagious* nature; for all who, from friendship, business, or duty, communicated with the diseased, were themselves infected; and no instance occurred wherein the contagion could not be traced to its particular source.

That part of the *garrison* quartered nearest to where the Hankey lay, were the first of this class of men who received the infection. A barrack, containing nearly one-half of the 45th regiment, was situated exactly to leeward of the Hankey, and distant from her about two hundred yards. It is not to be supposed, that this circumstance alone could be productive of a disease arising from contagion; but it was so in a secondary manner, by exciting the curiosity of some of the officers. One of these visited the Hankey, and, with two or three soldiers

diets who rowed his boat, remained on board some time. The consequence of this imprudence was fatal to himself almost immediately after ; and, in a little time, too many of the men : all the officers and men were successively seized with the disease ; but it proved fatal only to recruits who had lately joined. The strength of the regiment at this time was 280, and of these 24 died ; so that the proportion was one to something less than twelve. The smallness of this proportion arose from the mode of treatment by mercury ; as will be shewn hereafter.

About the beginning of May, the disease made its appearance in the detachment of *Royal Artillery* : a circumstance rather extraordinary, as that corps were quartered in a situation far removed from the focus of infection. It was evidently produced, however, by the communication which the gunners, doing duty in Fort George, had with the 45th regiment ; and the predisposition of the men to receive infection, as far as that could be induced by excesses in drinking, and other irregularities, was by no means less than that of the sailors and soldiers of the 45th regiment. Of 84 people belonging to the ordnance department at that time, about 56 were seized with the disease before the 1st of July, and of these five died : a trifling mortality, considering the nature of the complaint. All these men, however, had been about three years in the country, and consequently suffered less from the disease,

disease, than about 27 recruits who joined the artillery in July. Of 26 of these unfortunate men who were infected, 21 died before the middle of August : a dreadful instance of its peculiar tendency to prove fatal to strangers to the climate.

About the middle of June, the disease broke out in the 57th *regiment* ; and among the artificers and labourers on Richmond-hill. The infection was communicated by some of the latter, who had visited their friends in town labouring under it. All were successively seized with it ; but it fell heavier on the officers than the men, several of the former being young men lately arrived from Europe. The proportion of deaths was about *one to fifteen*.

The disease, in the course of the months of May, June, and July, appeared in several distinct and distant parts of the country, whither the infection was carried by persons who imprudently visited infected houses in town.

But the infection was not confined to *Grenada* alone ; from this, as a focus, it spread to *Jamaica*, *St. Domingo*, and to the other islands, by means of vessels on board of which the infection was retained by the clothes, more especially the woollen jackets of the deceased sailors ; and the multitude which perished from this cause is scarcely credible.

SECT. XLVIII.

SECOND CAUSE, OR PUTRID FEVER ARISING FROM
ANIMAL AND VEGETABLE MIASMATA.

ANOTHER, and I believe a more frequent cause of putrid fever, is the miasms from the corruption of animal and vegetable substances.

Putrefaction is the great process appointed by the Creator, for the resolution of animal and vegetable substances into *the elements* from which they were first formed. By this process, the oak and the bramble, the cedar and the hyssop, fruits, whether delicious or nutritive, or acrid or poisonous, the most beautiful of the human species, and the most frightful of the other tribes of animals, are all reduced to one common lot: they finally return back to their original and primeval elements. Hence the adage—*Omnia metit tempus*.

This resolution of bodies, when philosophically considered, is equally wonderful with their formation; and is alike governed by *regular* and *invariable laws*. Every plant brings forth its own kind, and every animal its own species. These live, they are nourished, and silently hasten to decay; they pass back to their *elementary state*, and are *again employed* as the *constituent parts* of *other vegetables* and *other animals*. Such, with re-
spect



spect to the material part of the creation, is the amazing circle of LIFE and DEATH! a circle in which nature keeps her steady rounds, and moves agreeably to laws established by the ALMIGHTY.

Vegetable substances which consist of HYDROGEN, OXYGEN, and CARBON, maintain for a long while their organized structure, and putrefy with difficulty. Having passed through first the *vinous** and then the *acetous fermentations*†, they at length become subject to the *putrefactive fer-*

* The first effect we see produced on vegetable substances which have lost their VITAL PRINCIPLE, is the destruction of the equilibrium, or just union of their three constituent principles (*hydrogen, oxygen, and carbon*), by the action, or operation, of *heat and moisture*. The OXYGEN unites with the CARBON, and the fermenting juice is covered on its surface with *carbonic acid gas*. The specific gravity of the liquor is now considerably diminished, and if exposed to distillation, it affords a *light inflammable substance*, called ALKOHOL, or SPIRIT OF WINE: which, as we might reasonably expect from the volatilization in great part of the *carbon and oxygen*, is almost entirely made up of the other vegetable principle, *hydrogen*: for if eight ounces of SPIRIT OF WINE OR ALKOHOL be burnt in a confined apparatus containing only *oxygen gas*, the product will be nine ounces of WATER. The ALKOHOL, having in this case increased its weight *an ounce*, must have attracted *something*, and *this something* can be *nothing else* but OXYGEN, the base of *oxygen air*, and the CALORIC of the *oxygen air* being disengaged, is seen in its active form during the combustion.

† This *second stage* of spontaneous decomposition, as it is called, is nothing more than the *absorption* or *imbibing* of OXYGEN from the air.

*ment**, and the HYDROGEN of the vegetable escapes in the form of *hydrogen gas*, while the OXYGEN and CARBON evaporate in the form of *carbonic acid gas*, leaving nothing behind but a small residuum of carbon and vegetable earth.

It is different with substances containing a portion of AZOT. The *equilibrium of parts* is soon destroyed. Hence it is that animal excrements, which contain, like other animal matter, a quantity of AZOT†, are added to the elements capable of putrefaction, to form composts or dung-hills.

The addition of AZOT not only accelerates the putrefactive process, but the *azot* combining with the *hydrogen*, affords a new product, which is AMMONIAC OR VOLATILE ALKALI‡. Monf. Bertholet has proved, by a variety of experiments, that AMMONIAC is produced by the union of *azot* and *hydrogen*, for if the *azot* in the *animal substances* be disengaged by the action of diluted nitrous acid, NO AMMONIAC will be produced,

* When the spontaneous decomposition is suffered to proceed beyond the *acetous process*, then the *third state*, or PUTREFACTIVE FERMENT, takes place.

† The putrefactive process is most eminently perceived in *animal bodies*. These either putrefy immediately; or, if the putrefaction be *preceded* by either of the other stages, their duration is too short to be perceived.

‡ *This compound* did not naturally exist in the animal substance, but is formed by the combination, in a certain proportion, of two of its constituent elements.

and

and in all cases putrifying substances furnish AMMONIAC only in proportion to the *azot* they contain.

The following experiment also fully proves the composition of AMMONIAC.

If AMMONIAC be combined, says Mons. FOURCROY, with a METALLIC OXYD, the *hydrogen* of the AMMONIAC will unite with the *oxygen* of the METALLIC OXYD, and form *water*, whilst the *metal* is revived, and the *azot*, being left free, will unite with the *caloric* and assume the form of a *gas* or *air*.

AMMONIAC has a peculiar penetrating odour. In the putrefaction of animal substances sometimes AMMONIAC predominates, which is easily perceived by its sharpness upon the eyes, and sometimes, as in putrid herrings, the PHOSPHORATED HYDROGEN GAS is most abundant.

PHOSPHORUS is found in almost all animal substances, and in some plants which give indeed a kind of animal analysis.

It is chiefly to AMMONIAC (*hydrogen* and *azot*) and PHOSPHORUS dissolved in HYDROGEN GAS, that the foetor issuing from the putrefaction of animal substances depends.

This vapour is highly hurtful to animal life. When accumulated, if the pick-axe of the grave-digger unfortunately ruptures the coffin, it bursts forth, and oftentimes proves fatal to the sexton, and is seen to affect every person *at a distance* with vertigo, nausea, and uneasiness. After having observed

served the constant dread that grave-diggers have for this poisonous vapour, after having seen the cadaverous paleness of countenance, and other marks of the gradual action of a slow poison, so evident in the appearance of *all men employed much in church yards*, it is impossible not to believe that the air in their immediate neighbourhood must, in some measure, injure the health of the inhabitants.

I have sometimes observed, says Dr. St. John, a phænomenon to take place during the putrefaction of human bodies, and which I cannot but think of very great importance to be enquired into and known. This is the exhalation of a particular gas, which is the most active and dreadful of all corrosive poisons, and produces most sudden and terrible effects upon a living creature. This I more than once have had an opportunity of remarking in the dissecting room of Mr. Andravi at Paris*. The aeriform fluid which is exhaled at certain times from animal bodies in putrefaction, is infinitely more noxious than any

* Mr. Andravi has had more actual practice in anatomy than any other man in Europe. He has discovered a method of amputating the humerus at the articulation, by which he saves the deltoid muscle, and the parts are healed in a few days: an improvement very little known, but which in England would render him immortal. He is looked upon at Paris as a very singular man, because he always speaks his mind, and is as much an admirer of simplicity in chirurgical operations as our late celebrated Messrs. Pott and Hunter.

elastic

elastic fluid as yet discovered. So that it is utterly dangerous to approach a body in a state of putrefaction. I have known a gentleman who, by slightly touching the intestines of a human body beginning to liberate this corrosive gas, was affected with a violent inflammation, which in a very short space of time extended up almost the entire of his arm, producing an extensive ulcer of the most foul and frightful black appearance, which continued for several months, and reduced him to a miserable state of emaciation. This is only one example of many which I have seen. I have known a celebrated professor who was attacked with a violent inflammation of the nares and fauces, from which he with difficulty recovered, by stooping for an instant over a body which was beginning to give forth this deleterious fluid. It is happy for mankind that this particular stage of putrefaction continues but for a few hours; and what may appear very remarkable, this destructive gas is not very disagreeable in smell, and has nothing of that abominable and loathsome fœtor produced by dead bodies in a less dangerous state of corruption; but has a certain smell totally peculiar to itself, by which it may be instantly discovered by any one that ever smelled it before.

This is an object very worthy the attention of physicians; it is both extremely interesting, and very little known; but at the same time it is a study

study in the highest degree unpleasant, from the detestable smell and nastiness which attend the putrefaction of animal bodies; and a man must be armed with uncommon philanthropy and resolution to attempt it. I think it probable that there is a rapid fixation of the basis of *vital air* in dead bodies at a certain state of putrefaction, on account of the luminous appearance which they sometimes make, as if all over painted with liquid fire. This phosphoric state, if I may so call it, exists but for a few hours at the most; and sometimes affords a more beautiful and brilliant appearance than can be imagined. But whether it takes place in every body, or whether it precedes or follows the exhalation of the corrosive gas above-mentioned, I have not been able to discover. As I know of nothing more active or corrosive in nature than the gas above-mentioned, which disengages from animal bodies in putrefaction, I think it probable, that the same gas modified, or mixed, or united with others, may be the occasion of putrid fever, &c. If so, it surely deserves our attention; and by acquiring a knowledge of its cause, nature, and affinities, we may know how either to prevent its production, or protect ourselves from its influence after it is produced. We have had an Englishman generous enough to make a voyage to the Levant, to cure the Turks of the plague; such an adventure, undertaken by men of genius and

and science, may be productive of more benefit to mankind; and if my ideas are just, we have here a seeming possibility of being able to tear up the evil by the very roots.

Becher had the courage to make observations, during the course of a year, upon the decomposition of a carcase in the open air; and to observe all the phænomena. The first vapour which rises, says he, is subtile and nauseous: some days after it has a certain sour and penetrating smell. After the first weeks, the skin becomes covered with a down, and appears yellowish; greenish spots are formed in various places, which afterwards become livid and black; a thick mossy or mouldy substance then covers the greatest part of the body; the spots open, and emit a fœtids.

Carcafes buried in the earth present very different phænomena; the decomposition in a burying-ground is at least four times as slow. It is not perfectly ended, according to Mr. Petit, till three years after the body has been interred, at the depth of four feet; and it is slower in proportion as the body is buried at a greater depth. These facts agree with the principles which we have already established for bodies buried in the earth, and subjected to laws of decomposition very different from those which take place in bodies exposed to the open air. In this case the decomposition is favoured by the waters which filter

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per through the earth, and dissolve and carry with them the animal juices. It is also favoured by the earth, which absorbs the juices with more or less facility. Messrs. Lemery, Geoffroy, and Hunaud, have proved that argillaceous earths exert a very slow action upon bodies; but when the earths are porous and light, the bodies then dry very speedily. The several principles of bodies absorbed by the earth, or carried by the vapours, are dispersed through a great space, imbibed by the roots of vegetables, and gradually decomposed. This is what passes in burying-grounds in the open air; but it is very far from being applicable to the sepulchres which are made in churches and covered places. Here is neither water nor vegetation; and consequently no cause which can carry away, dissolve, or change the nature of the animal fluids: and it is an instance of wisdom in the French government, that has prohibited the burying in churches; a practice now considered by them as a subject of horror and infection.

The accidents which have happened at the opening of graves and vaults, are but too numerous to render any apology necessary for our speaking a few words respecting the method of preventing them.

The decomposition of a body in the bowels of the earth can never be dangerous, provided it be buried at a sufficient depth, and that the grave be
not

not opened before its entire and complete decomposition. The depth of the grave ought to be such that the external air cannot penetrate it; that the juices with which the earth is impregnated may not be conveyed to its surface; and that the exhalations, vapours, or gases, which are developed or formed by decomposition, should not be capable of forcing the earthy covering which detains them. The nature of the earth in which the grave is dug, influences all its effects. If the stratum which covers the body be argillaceous, the depth of the grave may be less, as this earth difficultly affords a passage to gas and vapour; but in general it is admitted to be necessary that bodies should be buried at the depth of five feet, to prevent all these unhappy accidents. It is likewise necessary to attend to the circumstance, that a grave ought not to be opened before the complete decomposition of the body. This decomposition, according to Mr. Petit, is not perfect until the expiration of three years, in graves of four feet depth; or four years, when they are six feet deep. This term affords many varieties, according to the nature of the earth, and the constitution of the subjects buried in it? but we may consider it as a medium. The pernicious custom which allows a single grave to families more or less numerous, ought, therefore, to be suppressed; for in this case the same grave may be opened before the time prescribed. These are
abuses

abuses which ought to occupy the attention of government; and it is time that the vanity of individuals should be sacrificed to the public safety. It is likewise necessary to prohibit burying in vaults, and even in coffins. In the first case, the principles of the bodies are spread into the air, and infect it; in the second their decomposition is slower and less perfect.

If these precautions be neglected; if the dead bodies be heaped together in too confined a space; if the earth be not proper to absorb the juices, and decompose them; if the grave be opened before the entire decomposition of the body—unhappy accidents will, no doubt, be produced; and these accidents are but too common in great towns, where every wise precaution is neglected. An instance of this happened when the ground of the church of St. Benoit, at Paris, was dug up a few years ago; a nauseous vapour was emitted, and several of the neighbours were affected by it. The earth which was taken out of this grave was unctuous, viscid, and emitted an infectious smell. Messrs. Maret and Navier have left us similar observations.

Most authors have observed putrid fevers to have arisen from the corruption of the dead bodies after battle. This *Galen* notes as one of the causes of pestilential fevers *, and is supported

* Epit. Galen de Feb. Differ. lib. I. cap. iv.

by the testimony of other authors ; in particular by *Foreſtus*, who was eye-witneſs to a diſtemper of this kind, (which indeed he calls a plague) owing to the ſame cauſe, attended with buboes, and a high degree of contagion *. The ſame author alſo gives an account of a malignant fever breaking out at *Egmont*, in *North-Holland*, occaſioned by the rotting of a whale that had been left upon the ſhore †. We have a like obſervation of a fever affecting a ſhip's crew, upon the putrefaction of ſome cattle they had killed in the iſland of *Nevis*, in the *West-Indies* ‡. Theſe men were ſeized with a pain in the head and loins, great weakneſs and diſorder of the ſtomach, accompanied with a fever. Some had carbuncles, and it was remarked that purple ſpots appeared even after death.

Foreſtus informs us of a plague (rather a peſtential fever), that raged at *Venice* in his time, owing to the corruption of a ſmall kind of fiſh in that part of the *Adriatic* §. And the ſame author quotes *Montanus*, for a deſcription of the peſtential endemic fever at *Famaguſta*, in *Cyprus*, ariſing in ſummer from the corruption of a lake in the neighbourhood.

* Obſervat. lib. VI. obſ. xxvi.

† Obſ. ix. ſchol. *PARÆUS* ſays, that in his time the like happened on the coaſt of *Tuſcany*. *Vid. de Peſte, cap. III.*

‡ *Traité de la Peſte.*

§ Obſervat. lib. VI. obſ. ix. ſchol.

History abounds with many examples of pestilential fevers, added to the other miseries of a siege : nay, there is scarce any instance of a town being long invested, without some fatal malady of this kind. Sometimes it may be owing also to the filth of a place, crowded with people and cattle brought in for shelter ; as it formerly happened both at *Athens* * and at *Rome* †.

From this view of the *causes* of malignant fevers and fluxes, it is easy to conceive how incident they must be to all populous cities, low and ill-aired ; unprovided with common shores ; or where the streets are narrow and foul ; or the houses dirty ; where water is scarce ; where jails or hospitals are crowded, and not ventilated and kept clean ; when in sickly times the burials are within the towns ‡, and the bodies not laid deep ; when slaughter-houses are also within the walls ; or when dead animals and offals are left to rot in the kennels, or on dunghills.

Though the putrefaction of a vegetable substance is not to be reckoned nearly so fatal as that of animals, it is not, however, without danger ; for vegetables, rotting in a close place, yield a cadaverous smell ; and we have instances of *malignant fevers occasioned by the

* DIODOR. *Sicul.* Bibliothec. Hist. lib. XII. cap. xiv.

† TIT. LIV. anno U. C. 291.

‡ SCRETA de Feb. Castrens.

effluvia of putrid cabbages *, as well as of plants in marshes.

Forestus imputes the plague at *Delft*, in the year 1557, to the eating of mouldy grain, that had been long kept up by the merchants in the time of a dearth †. And I have heard it remarked, that in this island the dysentery is observed to be most frequent among the common people, in those parts where they live wholly on grain, when the preceding crop has been damaged in a rainy season, or kept in damp granaries.

We cannot but observe, that though all moist countries are subject to intermittents, yet if the moisture is pure, and the summers are not close and hot, these fevers will mostly appear in a regular tertian shape, and be easily cured. But if the moisture arises from long stagnating water, in which plants, fishes, and insects, die and rot, then the damps being of a putrid nature, not only occasion more frequent, but more dangerous fevers, which oftner appear in the form of quotidians, or double tertians, than that of single ones. These are not only apt to begin in a continued shape, but after intermitting for some days, to change again into *continuals* of a putrid and malignant nature. It is remarkable how much these fevers

* Dr. ROGERS's Essay on Epidemic Diseases, p. 41.

† Observat. lib. vi. obs. ix.

vary with the season ; for, however frequent, violent, or dangerous, they have been in the decline of summer, or beginning of autumn, when the putrefaction is at the height, yet before winter they are reduced to a small number, become mild, and generally assume a regular tertian form.

The worst kind of fevers are mentioned by Sir John Pringle, in his observations on the diseases of the army in the campaign in the Low Countries, to prevail in the country bordering upon the inundations in *Dutch Brabant* ; the next were those of *Zealand* ; of the third degree were such as appeared in the lines of *Bergen-op-Zoom* ; and the mildest sort, comparatively, were those that were most frequent in the cantonments round *Eyndhoven*, in villages rendered moist by plantations and under-ground-water, but that not putrid. I shall describe the first and worst kind, from which it will be easy to judge of the nature of the rest.

In the end of *July* 1748, when the troops had been about a fortnight or three weeks in the cantonments, whilst the days were sultry, but the nights cool and foggy, several of the men (of those regiments that lay nearest the inundations) were seized at once with a burning heat and violent head-ach ; some feeling a short and slight chilliness before ; others mentioning no preceding disorder. They complained, besides, of intense thirst,

thirst, aching of the bones, a pain of the back, great lassitude and inquietude, frequently of a *nausea*, sickness, or a pain about the pit of the stomach, sometimes attended with a vomiting of green or yellow bile of an offensive smell. The pulse was, upon the first attack, generally depressed; but rose upon bleeding.

At *Copenhagen*, in the year 1652, a fever began in autumn, after an unusually hot and dry summer *. The city is situated in a low and marshy country. The fever was accompanied either with quotidian or tertian paroxysms, with bilious vomitings, a burning heat, violent head-achs, frequently a *delirium*; and with petechial spots, that came out in the fits, and disappeared in the remissions. These, with an extraordinary debility, indicated the malignant nature of the fever, farther ascertained by its ending in profuse sweats, abscesses, a *diarrhœa*, or dysentery. The author of this account, *Thomas Bartholine*, upon dissecting the bodies, and finding the stomach and *duodenum* always inflamed or mortified, assigns these parts as the seat of all malignant fevers.

In the year 1669 a like fever raged at *Leyden*, described by the famous *Sylvius (De le Boe)* †, who lived at the time, and practised there. The situation of this place is also very low and damp.

* BARTHOLIN. *Histor. Anatomic. Rar. cent. II. hist. lvi.*

† PRAX. Med. append. tract. x.

The spring and beginning of summer were cold, but the remainder of summer and autumn were exceeding hot, with little or no rain, and with a constant calm or stagnation of the air. The water of the canals and ditches was highly corrupted; and the more so, as the author observes, by an inlet of salt-water mixing with the fresh. The air being thereby rendered impure, brought on an epidemic fever, of a remitting or intermitting form, and very fatal. Besides a disorder of the stomach, great anxiety, bilious vomitings, quotidian or tertian paroxysms, and other symptoms, the constant attendants of this illness, he mentions spots, oozing of blood from the nose and hæmorrhoidal veins, dysenteric stools, putrid urine, great debility, *aphthæ*, and other appearances, that argued an extraordinary resolution and putrefaction of the blood. “And yet, what is “strange,” says Sir John Pringle, “*Sylvius* ascribed “the cause to a prevailing *acid**, and treated the “distemper accordingly; so that we cannot help “remarking, that the great mortality among the “principal inhabitants of that city (of which, “he says, two-thirds died) may have been owing, “in some measure, to the method of cure by “absorbents and other such medicines, agreeable “to the notion that author, and his followers, “entertained of its cause.”

* SYLV. Prax. loc. cit. DCXXVII.

These, and other instances of the same kind, may confirm what was observed before, of the danger arising from hot and dry summers to moist and low countries.

But the bilious diseases are still more frequent and fatal in the marshy countries of the south, where the heats are longer and more intense. In some parts of *Italy*, and other tracts of the same latitude, these fevers have appeared with such dangerous and putrid symptoms, as not only to have been called pestilential, but confounded with the plague itself. In this sense we are to understand *Celsus* *, in the terms *pestilentia* and *febris pestentialis*, which he describes as peculiar to the *grave anni tempus* and the *graves regiones*. His meaning is, that the bilious and malignant fever is the disease of the latter part of summer, and of autumn, when the air is thickest and most foggy; and that it is most incident to low and wet countries.

Rome was always liable to these fevers. *Galen* calls the *hemitritæa* the epidemic of that city, and speaks of its moist air †. Nay, in the beginning of the *Republic*, before the *Romans* seem to have been aware of the noxious effects of stagnating water, or at least knew how to let it off, that place appears to have been so very sickly, that

* Vid. CELS. de Medicin. lib. I. cap. x. lib. III. cap. vii.

† De Temperam. lib. II.

from the beginning of the state, to the year U. C. 459, I find no less than fifteen plagues mentioned by *Livy* *: which yet, from other circumstances, appear to have been only so many malignant and destructive epidemics, occasioned by the putrid *effluvia* from the neighbouring marshes. But when drains and common shores were made, *Rome* became much more healthful; and then only the low and wet places of *Latium* remained sickly. Afterwards, when the city fell into the hands of the *Goths*, the drains being stoppt, and the aqueducts cut, the *Roman* territory became one continued marsh; which for a series of years occasioned an incredible desolation †. And though these evils have been since greatly remedied, yet still, by neglecting to draw off the stagnating and corrupted water, after inundations of the *Tyber* succeeded by great heats, the malignant remitting and intermitting fevers become both general and fatal. The dissections made by *Lancisus*, added to his excellent account of those epidemics, are a full proof of their putrid nature ‡.

Although it does not appear that the countries in which *Hippocrates* practised were either marshy, or subject to inundations, yet we find him frequently mentioning these fevers as common in

* *LANCISIUS* reckons up several more from the same author, *Vid. Dissert. de Advent. Roman. Cæli Qualit. cap. III.*

† *Id. loc. cit.*

‡ *De Nox. Plaud. Effluv. lib. II. epid. I. cap. vi.*

summer and autumn; and as prevailing most when wet springs, with southerly winds, were succeeded by hot and close summers. A remarkable constitution of this kind is described in the epidemics*; at which time the diseases were ardent, remitting and intermitting fevers of the worst kind, attended with fluxes, parotids, and eruptions of a pestilential nature.

Prosper Alpinus observes, that the stagnated canals at *Grand Cairo* breed every year putrid and pestilential fevers, that prevail in *March, April, and May*, which the constant southerly winds make the hottest months in that country†. He also remarks, that the pestilential fevers are both epidemic and fatal at *Alexandria* in autumn, after the recess of the *Nile*. These begin with a *nausea*, great sickness at the stomach, extraordinary inquietude, and a vomiting of an acrid bile‡: and many have bilious and putrid stools. Now, as these distempers rage in both cities every year, it is not surprizing, if in seasons uncommonly hot and moist, they should be raised to a true plague. For although the learned author asserts, that the true plague is not properly indigenous to *Egypt*, but is brought thither from *Greece, Syria*, or the more southern parts of *Africa*, yet he owns that it sometimes begins there after extraordinary

* Lib. III. § iii.

† De Medicin. Ægyptior, lib. I. cap. xiv.

‡ The author's phrase is, *bilis virulenta*,

inundations of the *Nile*; when the water, extending itself beyond the usual drains, remains on the land, and forms into putrid marshes*.

There is a pretty exact uniformity in the appearances and nature of the fevers and fluxes which attack strangers in Guinea; only their malignity or violence, and the mortality proceeding from them, in the rainy season, are in proportion to the situation of the place, and its ventilation.

The natives themselves are not exempted from those diseases. They are in general short-lived, and perceive as various degrees of purity and insalubrity of the air, in different spots of their country, as are felt in Europe, or in any other part of the world. On account of the badness of the climate, black priests, natives of the country, are hired by the Portuguese to undertake the conversion of those of their own colour, who reside in unhealthy places: hence the missions of Rio Nunes and at Gagashore have been rendered both honourable and lucrative, to such black missionaries as chose to undertake them.

We shall conclude our account of Guinea, with some extracts from the journal of the surgeon of a ship, which sailed up the rivers of that country: "Upon the 20th of February, we sailed from Lisbon, and on the 16th of March arrived at

* De Medicin. Ægyptior. lib. I. cap. xv.

the island of St. Jago. Here we found ships of different nations, whose crews, as also the white people on the island, were perfectly healthy. The latter, however, seemed to have been sickly, and many of them were afflicted with ague-cakes, or hard swellings on the seat of the spleen.

“ Upon the 5th of April, we sailed up the river Gambia, and found all the English in the fort in perfect health. The surgeon of the factory informed me, that a relaxation of the stomach, and consequently a weakened digestion, seemed to bring on most of the diseases so fatal to Europeans in the sickly season. They were generally of a bilious nature, attended with a low fever, sometimes of a malignant, at other times of a remittent kind. Fluxes were also then prevalent, and often proved mortal. The flux sometimes appeared alone, at other times attended the fever, most frequently followed it.

“ In the month of June, almost two-thirds of the white people were taken ill. Their sickness could not well be characterised by any denomination commonly applied to one class of fevers: it however approached nearest to what is called a *nervous fever*, as the pulse was always low, and the brain and nerves seemed principally affected. It had also a tendency to frequent remissions. It began sometimes with a vomiting, but oftener with a delirium. Its attack was commonly

monly in the night, and the patients being then delirious, were apt to run into the open air. *I observed them frequently recover their senses for a short time, by means of the heavy rain, which at that time fell upon their naked bodies.* But the delirium soon returned: they afterwards became comatose; their pulse sunk, and a train of nervous symptoms followed; their skin often became yellow; bilious vomitings and stools were frequent.

“The fever reduced the patient’s strength so much, that it was generally six weeks or two months before he was able to walk abroad. A consuming flux, a jaundice, a dropsy, or obstructions in the bowels, were generally the *consequences* of it. Of fifty-one white men, being the companies of four ships which were at Cat-chou, one-third died of the fever, and one-third more of the flux, and other diseases *consequent* upon it; of these not one was taken ill till after the rains began.

“I believe, on the whole face of the earth, there is scarce to be found a more unhealthy country than this, during the rainy season: the idea I then conceived of the situation of our white people, was by making a comparison of their breathing such a noxious air, with a number of river-fish put into stagnating water, where, as the water corrupts, the fish grow less lively, they droop, they pine away, and many die. Thus, some persons became dull, inactive, or slightly delirious

delirious at intervals, and without being so much as confined to their beds, they expired in that delirious state, in less than forty-eight hours, although such event seemed not to be apprehended. The white people in general became yellow; their stomach could not receive much food, without loathing and reachings. Indeed it is no wonder that this sickness proved so fatal, that recoveries from it were so tedious, and that they were attended with fluxes, dropries, the jaundice, ague-cakes, and other dangerous chronical distempers.

“ It seemed to me more wonderful that any white people should ever recover, while they continued to breathe so pestiferous an air, as that at *Catchou*, during the rainy season.

“ We were, as I have already observed, thirty miles distant from the sea, in a country altogether uncultivated, overflowed with water, surrounded with thick impenetrable woods, and over-run with slime. *The air was vitiated, noisome, and thick, insomuch that lighted torches or candles burnt dim, and seemed ready to be extinguished.* The smell of the ground and of the houses was raw and offensive; the vapour arising from the *putrid water*, in the ditches which surround the town, was much worse. All this, however, seemed tolerable when compared with the infinite numbers of insects swarming every where, both on the ground and in the air; which, as they seemed to be produced and cherished

cherished by the putrefaction of the atmosphere, so they contributed greatly to increase its impurity. The wild bees from the woods, together with millions of ants, over-ran and destroyed the furniture of the houses; at the same time, swarms of cock-roaches often darkened the air, and extinguished even candles in their flight; but the greatest plague was the the musquitoes and sand-flies, whose incessant buzz, and painful stings, were more insupportable than any symptom of the fever. Besides all these, an incredible number of frogs, on the banks of the river, made such a constant and disagreeable croaking, that nothing, but being accustomed to such an hideous noise, could permit the enjoyment of natural sleep.

“ In the beginning of October, as the rains abated, the weather became very hot; the woods were covered with abundance of dead frogs, and other vermin, left by the recess of the river; all the mangroves and shrubs were likewise over-spread with a stinking slime.”

How different is this from the air of the Canary islands. The Canaries are blessed with a temperate, pure, and wholesome air. No sooner were the English officers landed there, when brought sick from Senegal, than they found an immediate and satisfactory alteration in their health. There they no longer were scorched with the fierce heat of a meridian sun, but found its warmth tempered

pered with refreshing breezes, and a cool air; from which impenetrable surrounding woods had before debarred them. They were no longer sensible of the sudden and piercing chillness of the evenings, not tortured with swarms of blood-sucking gnats and flies. It was surprising in how short a time they recovered their health, strength, and colour, in those delightful islands.

The Dutch, with a folly almost incredible, by endeavouring to make their capital in India resemble their own cities, have adorned it with canals or ditches, intersecting each other, and running through every part of it. Those canals, filled with water, may serve for some use, or perhaps ornament; but notwithstanding the utmost care to keep them clean, in the hot and unwholesome climate of Java, during and after the rainy season, they become extremely noxious to the inhabitants, and more particularly to strangers. The unwholesome air of that place alone has cut off more Europeans than have fallen by the sword, in all the bloody wars carried on by the Dutch in that part of the world. In June the rains begin; in July, and the succeeding months, sickness rages most. It is remarked, that in the war which terminated in 1763, the English ships of war which touched at *Batavia*, suffered more by the malignant diseases of that climate, than they did in any other part of India, if we except a fatal scurvy which once raged in that fleet at sea.

Soon

Soon after the capture of Manilla, the *Falmouth*, a ship of 50 guns, went to Batavia, where she remained from the latter end of July to the latter end of January ; during which time she buried 75 of her crew, and 100 soldiers of the 79th regiment, who were embarked on board her ; not one person having escaped a fit of sickness, except her commander, Captain Brereton.

The *Panther*, a ship of 60 guns, was there in the years 1762 and 1764 ; both times unhappily during the rainy season. In the year 1762 she buried 70 of her men, and had 92 of them very ill when she left the place. In the year 1764, during a short stay, she buried 25 of her men : the *Medway*, which was then in company with her, lost also a great number of men.

Nor was the sickness at that time confined to the ships : the whole city afforded a scene of disease and death : streets crowded with funerals, bells tolling from morning to night, and horses jaded with dragging the dead in hearses to their graves. At that time a slight cut of the skin, the least scratch of a nail, or the most inconsiderable wound, turned quickly into a *putrid spreading ulcer*, which in twenty-four hours consumed the flesh, even to the bone. This fact is so extraordinary, that, upon a single testimony, credit would hardly be given to it ; yet, both on board the *Medway* and *Panther*, they had the most fatal experience of it, and several died from that cause.

Mr.

Mr. Ives gives us another most remarkable account of the destruction occasioned by the pestiferous air of marshes.

“ After sailing up the river Tigris from Bassora, we arrived at *Bagdat*. In this city, supposed to contain 500,000 souls, a *purple fever* then raged; but though it was computed that an eighth-part of the inhabitants were ill, yet the distemper was not generally mortal. Here we were informed, that the Arabs had broken down the banks of the river near Bassora, *with a design to cover with water the deserts in its neighbourhood*. This, it seems, is the usual method of revenge taken by the Arabs, for any injury done them by the Turks in Bassora; and was represented to us as an act of the most SHOCKING BARBARITY, since a general consuming sickness would undoubtedly be the consequence. This was the case fifteen years before, when the Arabs, by demolishing the banks of this river, laid the environs of Bassora under water. The stagnating and putrifying water in the adjacent country, and the great quantity of dead and corrupted fish, at that time lying upon the shore, polluted the whole atmosphere, and produced a putrid and mortal fever. Of this fever between 12 and 14,000 of the inhabitants died; at the same time not above two or three of the Europeans who were settled there escaped with life: *so dreadful are the effects of corrupt stagnating waters in such sultry climates!*”

I have perused many English accounts, both in manuscript and print, of the yellow fever, in most of which the authors have agreed only in the common epithet of yellow, from the skin's being frequently tinged with that colour. But the same appearance is also usual in most intermitting fevers, in some contagious fevers, and in many other fevers, so cannot properly be a distinguishing mark of this.

The yellow fever has been supposed by some to have been imported to the West Indies by a ship from Siam: an opinion truly chimerical; as similar diseases have made their appearance, not only in the East and West Indies, but in some of the southern parts of Europe, during a season when the air was intensely hot and unwholesome. This happened at *Cadiz* in Spain, in the months of September and October 1764, when excessive heat, and want of rain for some months, gave rise to violent, epidemic, bilious disorders, resembling those of the West Indies, of which *an hundred persons often died in a day*. At this time the winds blew mostly from the south, and, after sun-set, there fell an unusual and very heavy dew.

This disease began commonly with alternate slight chills and heats, nausea, pains of the head, of the back, of the loins, and at the pit of the stomach. These symptoms were often followed, in less than 24 hours, with violent reachings, and a vomiting of a green or yellow bile, the smell
of

of which was very offensive. Some threw up an humour black as ink, and died soon after, in violent convulsions, and in a cold sweat. The pulse was sometimes sunk, sometimes quick, often varying. After the first day the surface of the body was generally either cold, or dry and parched. The head-ach and stupor often ended in a furious delirium, which proved quickly fatal. The dead bodies having been examined, by order of the court of Madrid, the *stomach, mesentery, and intestines*, were found covered with *gangrenous spots*. The *orifice* of the *stomach* appeared to have been greatly *affected*, the *spots* upon it being *ulcerated*. The *liver* and *lungs* were both of a *putrid colour* and *texture*. The *stomach* contained a quantity of an *atrabilious liquor*, which, when poured on the ground, produced a *sensible effervescence*; and, when mixed with spirit of vitriol, a *violent ebullition*. The dead bodies turned so quickly putrid, that at the end of six hours their stench was intolerable; and, in some of them, worms were found already lodged in the stomach.

I am informed by Mr. Martin, surgeon of the Cataneuch, a Guinea trader, that when he was in *Gambia* river, in company with four other ships, the men, in one of those ships, were daily taken ill of fevers and fluxes, and several of them died delirious; while all the English in the other ships, and in the factories, were in perfect health: but upon removing that ship about half a league from

from her first anchorage, which was too near some swamps, her men became as healthy as those in the other ships.

In the year 1766, sixteen French protestant families, consisting of sixty persons, were sent, at the expence of the English government, to *West Florida*. The ground allotted for their residence was on the side of a hill, surrounded with marshes, at the mouth of the river Scambia. These new planters arrived in winter, and continued perfectly healthy until the sickly months, which in that country are those of July and August. About that time, eight gentlemen (from one of whom I received this account) went to this new settlement, to solicit votes for the election of a representative in the general assembly of the province; by remaining but one night; every one of them was seized with a violent intermitting fever, of which the candidate for becoming the representative, and another of their number, died. The next day seven other gentlemen came, upon the same business, to this unhealthy spot; but, by leaving it before night, they escaped the sickness, and all continued in perfect health. Among the French settlers, during these two months, the annual fever of the climate proved so fatal on this unwholesome spot, that of sixty persons, fourteen only survived; and even those who remained alive, in the September and October following, were all in a very ill state of health; not one of them.

them had escaped the attack of the fever, and most of them died within a few months afterwards, from the injury it had done to their constitutions.

In the year 1793, the manufactures, trade, and commerce of PHILADELPHIA, were flourishing in the greatest degree. The number of coaches, chairs, &c. lately set up in that city, by men in the middle rank of life, is hardly to be believed. And although there had been a very great increase of hackney chairs, yet was it next to impossible to procure one on a Sunday, unless it was engaged two or three days beforehand. Luxury, the usual, and perhaps inevitable concomitant of prosperity, had eradicated the plain and wholesome manners of an infant town. Every one looked forward to the full harvest of prosperity. But how fleeting are all human views! how uncertain all plans founded on earthly appearances! All these flattering prospects, as Mr. CAREY beautifully expresses it, vanished like the baseless fabric of a vision. At this seemingly propitious moment, the *destroying scourge* crept in among us, and nipped in the bud the fairest blossoms of hope. And, oh! what a dreadful contrast suddenly took place!

This fever is supposed to have originated from the miasm of *damaged coffee*. On the nineteenth of August I was requested, says Dr. Rush, to visit the wife of Mr. Peter Le Maigre, in Water-

street, between Arch and Race-streets, in consultation with D. Foulke and Dr. Hodge. I found her in the last stage of a highly bilious fever. She vomited constantly, and complained of great heat and burning at her stomach. The most powerful cordials and tonics were prescribed, but to no purpose. She died on the evening of the next day.

Upon coming out of Mrs. Le Maigre's room, I remarked to Dr. Foulke and Dr. Hodge, that I had seen an unusual appearance of bilious fever, accompanied with symptoms of uncommon malignity, and that I suspected all was not right in our city. Dr. Hodge immediately replied, that a fever of a most malignant kind had carried off four or five persons within sight of Mr. Le Maigre's door, and that one of them had died in twelve hours after the attack of the disorder. This information satisfied me that my apprehensions were well founded. The origin of this fever was discovered to me at the same time, from the account which Dr. Foulke gave me of a quantity of *damaged coffee* which had been thrown upon Mr. Ball's wharf, and in the adjoining dock, on the 24th of July, nearly in a line with Mr. Le Maigre's house, and which had putrefied there, to the great annoyance of the whole neighbourhood.

After this consultation, I was soon able to trace all the cases of fever which I have mentioned to *this source*. Dr. Hodge lived a few doors above
Mr.

Mr. Le Maigre's, where his child had been exposed to the exhalation from the coffee for several days. Mrs. Bradford had spent an afternoon in a house directly opposite to the wharf and dock on which the *putrid coffee* had emitted its noxious effluvia, a few days before her sickness, and had been much incommoded by it. Her sister, Mrs. Leaning, had visited her during her illness, and probably caught the fever from her, for she perfectly recollected perceiving a peculiar smell, unlike to any thing she had been accustomed to in a sick room, as soon as she entered the chamber where her sister lay. Young Mr. M'Nair, and Mrs. Palmer's two sons, had spent whole days in a counting-house, near where the coffee was exposed, and each of them had complained of having been made sick by its offensive smell; and Mr. Aston had frequently been in Water-street, near the source of the exhalation.

Upon my leaving Mrs. Le Maigre's, I expressed my distress at what I had discovered, to several of my fellow-citizens. The report of a malignant and contagious fever being in town spread in every direction, but it did not gain universal credit. Some of those physicians, who had not seen patients in it, denied that any such fever existed; and asserted (though its mortality was not denied) that it was nothing but the common remittent of the city. Many of the citizens joined the physicians in endeavouring to discredit the account.

I had given of this fever; and, for awhile, it was treated with ridicule or contempt. Indignation in some instances was excited against me.

My lot, says Dr. Rush, in having thus disturbed the repose of the public mind, upon the subject of general health, was not a singular one. There are many instances, upon record, of physicians who have rendered themselves unpopular, and even odious to their fellow citizens, by giving the first notice of the existence of malignant and mortal diseases. A physician who asserted that the plague was in Messina, in the year 1743, excited so much rage in the minds of his fellow citizens against him, as to render it necessary for him to save his life, by retreating to one of the churches of that city.

In spite, however, of all opposition, the report of the existence of a malignant and contagious fever in the city, gained so much ground, that the governor of the state directed Dr. Hutchinson, the inspector of sickly vessels, to inquire into the truth of it, and into the nature of the disease. In consequence of this order, I received the following letter from Dr. Hutchinson.

DEAR SIR,

A considerable alarm has taken place, in consequence of the appearance of an infectious disorder in this city; from which the governor has been induced to direct me to make enquiries relative

tive to the existence and nature of such disorder, In executing this duty, I must rely on the assistance of such of my medical brethren as may have been called to attend any of the persons supposed to have been infected: as I understand you have had several of them under your care, I would be much obliged to you to communicate to me (as speedily as can be done with convenience to yourself) such facts as you have been able to ascertain relative to the existence of such disorder; in what part of the city it prevails; when it was introduced; and what was the probable cause of it.

I am, Sir,

With the greatest respect,

August 24th,
1793.

Your obedient servant,

J. HUTCHINSON.

Dr. Benjamin Rush.

To this letter I wrote the following answer a few hours after it came to hand:

DEAR SIR,

A malignant fever has lately appeared in our city, originating, I believe, from some *damaged coffee*, which putrefied on a wharf near Arch-street. The fever was confined for awhile to Water-street, between Race and Arch-streets; but I have lately met with it in Second-street, and in Kensington; but whether propagated by *contagion*,

tagion, or by the *original exhalation*, I cannot tell. The disease puts on all the intermediate forms of a mild remittent, and a typhus gravior. I have not seen a fever of so much malignity, so general, since the year 1762.

From, Dear Sir,

August 24th,
1793.

Yours sincerely,

BENJ. RUSH.

A few days afterwards the following publication, by Dr. Hutchinson, appeared in the American Daily Advertiser of August 28th.

THE Governor having directed an inquiry to ascertain the facts, respecting the existence of a contagious fever in the city, and the probable means of removing it, Dr. Hutchinson, the physician of the port, has made the following statement upon the subject, in a letter to Nathaniel Falconer, Esq. health-officer of the port of Philadelphia.

DEAR SIR,

Immediately on the receipt of your letter, with the enclosure from the governor, stating that a considerable alarm had taken place, in consequence of the appearance of an infectious disorder in this city, I endeavoured to take measures to ascertain the facts, relative to the existence of such disease: for this purpose, I wrote to such of my medical brethren who had been called on to attend persons supposed to have been infected; and from their answers, as well as from

from my own observations, I am convinced that a malignant fever has lately made its appearance in Water-street, and in Kensington; principally in Water-street, between Arch and Race-streets. This part of the city I examined personally on Thursday and Friday last; and found, that east of Front-street, and between Arch and Race-streets, *sixty-seven* persons were diseased, many with the malignant fever. *Thirteen* of them are since *dead*, and numbers remain ill. For awhile this fever was confined to the above-mentioned part of the city, but the disorder is spreading, and now appears in other places, so that several are affected in other parts of Water-street, some in Second-street, some in Vine-street, some in Carter's-alley, some in other streets; but, in most cases, the contagion can be *traced to Water-street*. As far as I have been able to ascertain, the number of persons who have died altogether of this fever, amounts to 40; or thereabouts*.

The general opinion, both of the medical gentlemen, and of the inhabitants of Water-street, is, that the contagion originated from some *damaged coffee*, or other *putrescied vegetable and animal matters*; and, on enquiry, it appears, that on a few wharfs above Arch-street, there was not only a quantity of *damaged coffee*, which was extremely offensive,

* The register of the deaths shows that it amounted, at that time, to upwards of 150.

exposed for some time, but also some *putrid hides*, and other *putrid animal and vegetable substances*.

It does not appear to be an *imported disease*; for I have heard of no foreigners or sailors that have hitherto been infected; nor has it been found in any lodging-houses; but it is, on the contrary, principally confined to the inhabitants of Water-street, and such as have done business, or had considerable intercourse with that part of the city. The Dispensary physicians tell me, that out of the large number of sick, now under the care of that charitable institution, they have had but one person afflicted with this fever. In the Pennsylvania Hospital the disorder does not exist.

I am, with the greatest respect,

Your most obedient servant,

Philadelphia,
August 27th, 1793.

J. HUTCHINSON.

From a conviction that the disease originated in the putrid exhalations from the damaged coffee, I published, in the American Daily Advertiser of August 29th, the following short address to the citizens of Philadelphia, with a view of directing the public attention to the spot where the coffee lay, and thereby of checking the progress of the fever, as far as it was continued by the original cause.

“ Mr.

“ Mr. DUNLAP,

“ A doubt has been expressed, whether the malignant fever, which now prevails in our city, originated in an exhalation from some putrid coffee, on a wharf between Arch and Race-streets.

“ It is no new thing for the effluvia of putrid *vegetables* to produce malignant fevers. Cabbage, onions, black pepper, and even the mild potatoe, when in a state of *putrefaction*, have all been the remote causes of malignant fevers. The noxious quality of the effluvia from mill-ponds is derived wholly from a mixture of the putrefied leaves and bark of trees with water.

“ It is much less common for the effluvia of putrid *animal* matters to produce fevers. How seldom do we hear of them in the neighbourhood of slaughter-houses, or of the workshops of skinners or curriers?

“ These observations are intended to serve two purposes: 1st, To support the opinion of Dr. Hutchinson, that the malignant fever, which has excited so general and so just an alarm in our city, is *not an imported disease*; and, 2dly, To direct the attention of our citizens to the spot from whence this severe malady has been derived. It will be impossible to check it during the continuance of warm and dry weather, while any of the impure matter which produced it remains upon the pestilential wharf.

R.”

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This publication had no other effect than to produce fresh clamours against the author ; for the citizens, as well as most of the physicians of Philadelphia, had adopted a traditional opinion, that the yellow fever could exist among us only by importation from the West Indies.

In consequence, however, of a letter from Dr. Foulke to the Mayor of the city, in which he had decided, in a positive manner, in favour of the generation of the fever from the *putrid coffee* ; the mayor gave orders for the removal of the coffee, and the cleansing of the wharf and dock. It was said that measures were taken for this purpose ; but Dr. Foulke, who visited the place where the coffee lay, has repeatedly assured me, that they were so far from being effectual, that an *offensive smell* was exhaled from it many days afterwards. The fever, however, extended.

Dismay and affright are soon visible in every one's countenance. Most people, who can by any means make it convenient, are flying from the city. Of those who remain, many have shut themselves up in their houses, and are afraid to walk the streets. Those who venture abroad, have handkerchiefs or sponges impregnated with vinegar or camphor perpetually at their noses, or else are smelling at bottles with the thieves's vinegar. Others carry pieces of tar in their hands or pockets, or camphor bags tied round their necks. Many never walk on the foot path, but go into
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the middle of the streets, to avoid being infected in passing houses wherein people have died. Acquaintances and friends avoid each other in the streets, and only signify their regard by a cold nod. Every one appears to shift his course at the sight of a hearse coming towards him. A person with a crape, or any appearance of mourning, is shunned as a viper. Indeed it is probable LONDON did not exhibit stronger marks of terror than were seen in PHILADELPHIA from about the middle of August till pretty late in September. Many of our first commercial houses are totally dissolved by the death or flight of the parties, and their affairs necessarily left in so deranged a state, that the losses, and protests of notes, which have ensued, are beyond estimation.

While affairs were in this deplorable state, and people at the lowest ebb of despair, we cannot be astonished at the frightful scenes that were acted, which seemed to indicate a total dissolution of the bonds of society in the nearest and dearest connexions. Who, without horror, can read of a husband deserting his wife, united to him perhaps for twenty years, in the last agony ;—a wife unfeelingly abandoning her husband on his death-bed ;—parents forsaking their children :—children ungratefully flying from their parents, and resigning them to chance ;—masters hurrying off their faithful servants to the hospital, established out of the town, even on suspicion of the fever ;
and

and that at a time when, like Tartarus, it was open to every visitant, but never returned any ;—servants abandoning tender and humane masters, who only wanted a little care to restore them to health and usefulness :—who, I say, can even now reflect on these things without horror? Yet such were the daily spectacles exhibited throughout our city. Many men of affluent fortunes, who have given employment and sustenance to multitudes, have been abandoned to the care of a hired negro, after their wives, children, friends, clerks, and servants, have fled away, and left them to their fate. With the poor the case was, as might be expected, infinitely worse. Many of these have perished without a human being to hand them a little water, to administer medicines, or perform any charitable office for them. Various instances occur of dead bodies found lying in the streets, of persons who had no house of their own, and, looking ill, could procure no shelter.

The number of the infected daily increasing, and every one afflicted with this disease being refused admittance into the alms-houses, as some temporary place was requisite, three of the guardians of the poor took possession of *the Circus*, in which Mr. Ricketts had lately exhibited his equestrian feats, being the only place that could be procured for the purpose. Thither they sent seven persons afflicted with the malignant fever, where they lay in the open air for some time, without

without assistance, for nurses could not be procured them, though high wages were offered. Of these, one crawled out on the common, where he died at a distance from any house. Two died in the Circus, one of whom was seasonably removed, the other lay in a state of putrefaction for above forty-eight hours, owing to the difficulty of procuring any person to remove him.

The inhabitants of the neighbourhood of the Circus took the alarm, and threatened to burn or destroy it, unless the sick were removed; and it is believed they would have actually carried their threats into execution, had a compliance been delayed a day longer.

A servant girl, belonging to a family in this city, in which the fever had prevailed, was apprehensive of danger, and resolved to remove to a relation's in the country. She was, however, taken sick on the road, and returned to town, where she could find no person to receive her. One of the guardians of the poor provided a cart, and took her to the alms-house, into which she was refused admittance. She was brought back, and the guardians offered five dollars to procure her a single night's lodging, but in vain. And, in fine, after every effort to provide her shelter, she absolutely expired in the cart.

To add to the dreadful affliction of the inhabitants of PHILADELPHIA, the alarm was spread throughout the different states of America. The inhabitants

inhabitants of NEW YORK first came to a resolution to stop all intercourse with the infected city ; and for this purpose guards were stationed at the different landings, with orders to send back every person coming *from* PHILADELPHIA. All persons taking in lodgers were called upon to give information of all people of every description, under pain of being prosecuted according to law. All *good* citizens were required to give information to the mayor of any breach of these premises.

All these strict precautions being eluded by the anxious fugitives from PHILADELPHIA, there was a second meeting held, of the delegates from the several wards of the city, in order to adopt more effectual methods. At this meeting it was resolved to establish a night watch, of not less than ten citizens in each ward, to guard against such as might escape them by day. Not yet eased of their fears, they next day published an address, in which they mentioned, that, notwithstanding their utmost vigilance, many persons had been *clandestinely* landed upon the shores of NEW-YORK ISLAND. They therefore again called upon their fellow citizens to be cautious how they received strangers into their houses ; not to fail to report all such to the mayor immediately upon their arrival ; to remember *the importance of the occasion* ; and to consider *what reply they should make to the JUST resentment of their fellow citizens, whose lives they*

they might expose by a criminal neglect and infidelity. They likewise resolved, that they would consider and publish to the world, as *enemies to the welfare of the city*, and the lives of its inhabitants, all those who should be so selfish and hardy as to attempt to introduce any goods, wares, merchandize, bedding, baggage, &c. imported from, or packed up in PHILADELPHIA, contrary to the rules prescribed by that body, who were, they said, deputed to express the will of their fellow citizens.

While our citizens were thus, complains Mr. CAREY, proscribed in several cities and towns,—hunted up like felons in some,—and debarred admittance, and turned back in others, whether *found* or infected,—it is with extreme satisfaction I am able to record a few instances of a contrary procedure.

A respectable number of the inhabitants of *Springfield*, in NEW JERSEY, after a full consideration of the distresses of our citizens, passed a resolve, offering their town as an asylum to the people flying from PHILADELPHIA, and directing their committee to provide a suitable place, as an hospital, for such of them as might be seized with the prevailing *malignant fever*. An asylum was likewise offered to the Philadelphians by several of the inhabitants of *Elkton*, in MARYLAND; and the offer was couched in terms of
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the utmost sympathy for the distressed of the *Philadelphians*.

At this time the disorder was raging with increasing vehemence. By order of the mayor the *bells* were stopped from tolling. This was a very expedient measure; as they had before been kept pretty constantly going the whole day, so as to terrify those in health, and drive the sick, as far as the influence of imagination could produce that effect, to their graves. An idea had gone abroad, that the burning of *fires* in the streets would have a tendency to purify the air, and arrest the progress of the disorder. The people had, therefore, almost every night, large fires at the corners of each street. The mayor published also a proclamation, forbidding this dangerous practice. As a substitute, many had recourse to the firing of *guns*, which was imagined a sure preventative of the disorder. This was carried so far, and attended with so great noise, that it was also forbidden by an order from the mayor.

The situation of the *public hospital* was most dreadful. A profligate and unfeeling set of nurses (none of good character could be procured at this moment) rioted on the provisions and comforts prepared for the sick, who (unless at the hours the doctors attended) were left almost entirely destitute of every assistance. The dying and dead were indiscriminately mingled together. The ordure

dure and other evacuations of the sick were often allowed from inattention to remain. Not the smallest order or regularity existed. It was, in fact, a great *human slaughter-house*, where numerous victims were immolated at the altar of riot and intemperance. No wonder, then, that a general dread of the place prevailed throughout the city, and that a removal to it was considered as the seal of death. In consequence, there were various instances of sick persons locking their rooms, and resisting every attempt to carry them away. At length the poor were so much afraid of being sent to BUSH-HILL, that they would not acknowledge their illness, until it was no longer possible to conceal it. For it is to be observed, that the fear of the contagion was so prevalent, that as soon as any one was taken sick, an alarm was spread among the neighbours, and every effort was used to have the sick person hurried off to BUSH-HILL, to avoid spreading the disorder. The cases of poor people forced in this way to that hospital, though labouring under only common colds, and common fevers of irritation, are numerous and afflicting. There were not wanting instances of persons, only slightly ill, being sent to BUSH-HILL by their panic-struck neighbours, and embracing the first opportunity of running back to PHILADELPHIA.

At this time a circumstance however occurred, which alone would be sufficient to rescue the

character of man from obloquy and reproach. As a human being, I rejoice, says the benevolent Mr. CAREY, that it has fallen to my lot to be a witness and recorder of the fact. STEPHEN GERARD, a *wealthy* merchant, and native of *France*, touched with the wretched situation of the sufferers at BUSH-HILL, voluntarily and unexpectedly offered to superintend that hospital. The surprize and satisfaction excited by this extraordinary effort of humanity can be better conceived than expressed. PETER HELM, a native of *Pennsylvania*, actuated by the like benevolent motives, offered his services also in the same department.

To form a just estimate of the value of the offer of these good men, it is necessary to take into consideration the general consternation which at that period pervaded every quarter of the city, and which made attendance on the sick be regarded little less than *certain sacrifice*. Uninfluenced by any reflections of this kind, without any possible inducement but the purest motives of humanity, they came forward, and undertook what would by *others* be deemed a forlorn hope. They underwent a laborious round of duty. They incessantly encouraged and comforted the sick; they gave them necessaries and medicines; they even performed many disgusting offices of kindness, which nothing could render tolerable, but the exalted motives that impelled them to *this heroic conduct*.

On

On the contrary, the *jail of PHILADELPHIA* is under such excellent regulations, that the disorder made its appearance there only in two or three instances, although such abodes of misery are the places where contagious disorders are mostly generated. When this putrid fever raged most violently in the city, there were in the jail one hundred and six French soldiers and sailors, confined by the order of the French consul, besides eighty convicts, vagrants, and persons for trial; all of whom, except two or three, remained perfectly free from the complaint. Several circumstances conspired to produce this salutary effect.

The people confined are frequently cleansed and purified by the use of the hot and cold bath;—they are kept constantly employed;—vegetables form a considerable portion of their diet;—in the yard vegetation flourishes;—and many of them being employed in stone-cutting, the water, constantly running, keeps the *atmosphere* in a *moist* and *pure* state. Whereas the inhabitants of dirty and confined streets have severely expiated their neglect of cleanliness and decency, by the number of them that have fallen sacrifices. Whole families in such houses have sunk into one silent and undistinguished grave.

As I have been obliged to note a variety of horrid circumstances, which have a tendency to throw a shade over the human character, it is

proper to reflect a little light on the subject, wherever justice and truth will permit it. Here it ought so be recorded, that some of the convicts in the jail voluntarily offered themselves as *nurses* to attend the sick at BUSH-HILL, and have in that capacity conducted themselves with so much fidelity and tenderness, that they have had the repeated thanks of the managers.

In the progress of this disorder, from the numerous deaths of heads of families, a great number of children were left in a most abandoned and forlorn state. The bettering houses, in which such helpless subjects have been usually placed, was barred against them. Many of these little innocents were actually suffering for want of even common necessities. The deaths of their parents and protectors, which should have been the strongest recommendation to public charity, was the very reason of their distress, and of their being shunned as a pestilence. The children of a family, once in affluent circumstances, were found, their parents being dead, in a blacksmith's shop, squalid, dirty, and half starved, having been for a considerable time without even a taste of bread. This early caught the attention of the humane, and 160 children were soon rescued from this forlorn condition, and lodged in a building called the *Loganian Library*.

Rarely has it happened that so large a proportion of the gentlemen of the faculty have sunk beneath the

the labours of their very *dangerous profession*, as on this occasion. In little more than a month, exclusive of medical students, no less than *ten physicians* have been swept off. Hardly any of the *apothecaries*, who remained in the city, escaped from indisposition. The venerable SAMUEL ROBESAN has been, like a good angel, indefatigably performing, in families where there was not one person able to help another, even the menial offices of the kitchen, in every part of his neighbourhood. JOHN CONNELLY has spent hours beside the sick, when their own wives and children had abandoned them. Twice did he catch the disorder,—twice was he on the brink of the grave, which was yawning to receive him,—yet, unappalled by the imminent danger he had escaped, he again returned to the charge.

To habits *defectively* OXYGENATED, as with tiplers and drunkards, and men of a corpulent habit, and women with child, this disorder proved very *fatal*. Of these many were seized, and the recoveries were very rare.

If you examine the register of the weather, you will find there was *no rain* from the 25th of August until the 14th of October, except a few drops, hardly enough to lay the dust in the streets, which fell on the 9th of September, and the 12th of October. In consequence of which, the springs and wells failed in many parts of the country.

The

The dust in some places extended two feet below the surface of the ground. The pastures were deficient, or burnt up, and there was a scarcity of autumnal fruits in the neighbourhood of the city. The register of the weather shews also *how little* the *air* was *agitated* by *winds* during the above time*. In vain were the changes of the moon expected to alter the state of the atmosphere. The light of the morning as constantly mocked the hopes which were raised by a cloudy sky in the evening. Hundreds sickened each day beneath the influence of the sun; and even when his beams did not excite disease, they produced a languor in the body, and, to use the country phrase, the labourer in the field gave in, and that too when the mercury in the thermometer was under 80 degrees. On the 12th of September a

* However inoffensive uniform heat, when agitated by gentle breezes, may be, there is, I believe, no record, where a dry and stagnating air has existed for any length of time, without producing disease. HIPPOCRATES, in describing a pestilential fever, says, the year in which it prevailed was without a breeze of wind. The same state of the atmosphere, for six weeks, is mentioned in many of the histories of the plague which prevailed in London in 1665. Even the sea-air itself becomes unwholesome by stagnating; hence Dr. CLARK informs us, that sailors become sickly after long calms in their voyages to the East Indies. Sir JOHN PRINGLE delivers the following aphorism, from a number of similar observations upon this subject: "*When the heat comes on soon, and continues throughout autumn, not moderated by winds or rains, the season proves sickly, distempers appear early, and are dangerous.*"

meteor

meteor affrighted the inhabitants. *Muschetoes* were uncommonly numerous. Here and there a dead cat added to the impurity of the air of the streets; for many of those animals perished with hunger in the city, in consequence of so many houses being deserted by the inhabitants who had fled into the country.

A TABLE OF DEATHS.

		<i>Died.</i>		<i>Died.</i>		<i>Died.</i>
AUGUST	1	— 9	5	— 20	10	— 93
	2	— 8	6	— 24	11	— 119
	3	— 9	7	— 18	12	— 111
	4	— 10	8	— 42	13	— 104
	5	— 10	9	— 32	Rain, 14	— 81
	6	— 3	10	— 29	15	— 80
	7	— 12	11	— 23	16	— 70
	8	— 5	12	— 33	17	— 80
	9	— 11	13	— 37	18	— 59
	10	— 6	14	— 48	19	— 65
	11	— 7	15	— 56	20	— 55
	12	— 5	16	— 67	21	— 59
	13	— 11	17	— 81	22	— 82
	14	— 4	18	— 68	23	— 54
	15	— 9	19	— 61	24	— 38
	16	— 7	20	— 67	Cloudy, 25	— 35
	17	— 6	21	— 57	Cloudy, 26	— 23
	18	— 5	22	— 76	Rain, - 27	— 13
	19	— 9	23	— 68	Rain, - 28	— 24
	20	— 7	24	— 96	Fair, - 29	— 17
	21	— 8	25	— 87	Rain, - 30	— 16
	22	— 13	26	— 52	Rain, - 31	— 21
	23	— 10	27	— 60	Nov. Rain, 1	— 13
	24	— 17	28	— 51	Fair, - 2	— 21
	25	— 12	29	— 57	Cloudy, 3	— 15
	26	— 17	30	— 63	Rain, - 4	— 15
	27	— 12	OCTOB. 1	— 74	Rain, - 5	— 14
	28	— 22	2	— 66	Cloudy, 6	— 11
	29	— 24	3	— 78	Fair, but cold, 7	— 15
	30	— 20	4	— 58	Fair, - 8	— 8
	31	— 17	5	— 71	Fair, - 9	— 6
SEPT. 1	— 17		6	— 76	Fair, - 10	— 2
2	— 18		7	— 82	Fair, - 11	— 0
3	— 11		8	— 90		
4	— 23		9	— 102	TOTAL	— 4,000

From

From this table it appears that the principal mortality was in the second week of October. A general expectation had obtained, that *cold weather* was as destructive of the contagion of this fever as *heavy rains*. The usual time for its arrival had come, but the weather was still not only moderate but warm. In this awful situation, the stoutest hearts began to fail. Hope sickened, and despair succeeded distress in almost every countenance. On the 14th of *October* it pleased God to alter the state of the air. The clouds at last dropped health in *showers* of rain, which continued during the whole day, and which were succeeded for several nights afterwards by *cold* and *frost*. The effects of this change in the weather appeared first in the sudden diminution of the sick, for the deaths continued for a week afterwards to be nearly as numerous, but they were of persons who had been confined before, or on the day in which the change had taken place in the weather.

The appearance of this *rain* was like a dove with an olive branch in its mouth, to the whole city. Public notice was given of its beneficial effects in a letter subscribed by the mayor of Philadelphia, who acted as president of the committee, to the mayor of New York.

TO RICHARD VANCHE, ESQ.

“ SIR,

“ I am favoured with your letter of the
“ 12th instant, which I have communicated to
“ the Committee.

“ The part, Sir, which you personally take in
“ our afflictions, and which you have so patheti-
“ cally expressed in your letter, excites in the
“ breasts of the Committee the warmest sensations
“ of affection. The subscription made in New
“ YORK is a balm to the sores of our distressed
“ city.

“ I am overjoyed as I inform you, that the re-
“ freshing *rain* which fell on the 14th, though
“ light, and the *cool weather* which hath succeeded,
“ appear to have given a check to the prevalence
“ of the fever. Few since appear to have taken
“ the infection; the applications for the hospital
“ are few, and the funerals are decreased.

“ With sentiments of the greatest esteem and
“ regard,” &c.

On the 30th and 31st of October there was a considerable fall of *rain*. The fever was in consequence wholly subdued. A visible alteration soon took place in the city. Every hour long absent and welcome faces appear,—and, in many instances, those of persons whom public fame has buried for weeks past. The stores, so long closed, are opening fast. Some of the country merchants,
bolder

bolder than the rest, are daily venturing into their old place of supply. Market-street is almost as full of waggons as usual. The Custom-house, for weeks nearly deserted by our mercantile people, is thronged by citizens entering their vessels and goods :—the streets too, long the abode of gloom and despair, have assumed the bustle suitable to the season. The arrival in the city of our beloved President, continues Mr. CAREY, gives us a flattering prospect of the next session of congress being here. And, in fine, as every thing in the early stage of the disorder, seemed calculated to add to the consternation ; so now, on the contrary, every circumstance has a tendency to revive the hopes and happiness of our afflicted city.

SECT. XLIX.

THIRD CAUSE, PUTRID FEVER FROM CONTAGION.

ÆTHIOPIA and Egypt have been stigmatized, in every age, as the original source and seminary of the plague. In a damp, hot, stagnating air, this African fever is generated from the putrefaction of animal substances, and especially from the swarms of locusts, not less destructive to mankind in their death, than in their lives. This fatal disease, which depopulated the earth in the time of Justinian, and his successors, first appeared in the neighbourhood of Pelusium*. From thence, tracing as it were a double path, it spread to the East, over Syria, Persia, and the Indies, and penetrated to the West, along the coast of Africa, and over the continent of Europe. In the spring of the second year, Constantinople, during three or four months, was visited by the plague: and Procopius, who observed its progress and symptoms with the eyes of a physician, has emulated the skill and diligence of a Thucydides. This fever was characterized by swelling of the glands, particularly those of the groin, of the arm-pits, and under the ear; and when these buboes or tumors were opened, they were found to contain

* A town situated on the mouth of the Nile.

a *coal*, or *black substance**, of the size of a lentil. If they came to a just swelling and suppuration, the patient was saved by this kind and natural discharge of the morbid humour. But if they continued hard and dry, a *mortification* quickly ensued, and the fifth day was commonly the term of his life. The fever was often accompanied with lethargy or delirium; the bodies of the sick were often covered with *black* pustules or carbuncles; and in the constitutions too feeble to produce an eruption, the vomiting of blood was followed by a mortification of the bowels. To pregnant women the plague was generally mortal. Youth was the most perilous season; and the female sex was less susceptible than the male: but every rank and profession was attacked with

* These are the words of Gibbon: The *carbuncle*, says Hodges, is at first a small eruption, whose contents are soon discharged, then it crusts, looks *black*, and turns *hard*. It is surrounded with a circle of inflammation, at first of a bright red, which grows dusky, often livid, and finally *black*. This change to *black* is observed in all the other dire marks of the Plague. Speaking of *tokens*, which he elsewhere calls *stigmata nigra*, which are small spots, often the size of a silver-penny; in some, says he, the colour was reddish, of a faint blue, and often of a *black-brown*, resembling a mole in the body. So of *petechiæ*, they are said to be ruddy at first, but in a few hours become dusky, and finally of a leaden-purple. The same is said of the *maculae*, or large broad patches on the skin. *Welks*, or vibices, are narrow streaks, and they look like bruises by some narrow instrument; or as Forestus says, *Ut si quis fustibus cæsus esset, aut ab alto cecidisset*; as if one had been beaten, or had fallen from an eminence,

indiscriminate

indiscriminate rage, and many of those who escaped were in a wretched condition, without being secure from a return of the disorder*. The physicians of Constantinople were zealous and skilful; but their art was baffled by the various symptoms and pertinacious vehemence of the disease; and doubts are entertained, whether medicine did not sometimes aid the fatality of the disease. The order of funerals and the right of sepulchres were confounded; those who were left without friends or servants lay unburied in the streets, or in their desolate houses; and a magistrate was authorized to collect the promiscuous heaps of dead bodies, to transport them by land or water, and to inter them in deep pits beyond the precincts of the city.

Contagion is the inseparable companion of the plague, which, by respiration and perspiration, is waisted from the infected persons to the lungs and stomachs of those who approach them. While philosophers, says Gibbon, believe and tremble, it is singular that the existence of a real danger should have been denied by a peo-

* Thucydides (c. 51.) affirms that the infection could only be once taken; but Evagrius, who had family experience of the plague, observes, that some persons, who had escaped the first, sunk under the second attack; and this repetition is confirmed by Fabius Paullinus (p. 588). Russel, whose authority at the present day is greatest, mentions, in his History of the Plague, that occurrences of this kind happen, although very rarely.

ple most prone to vain and imaginary terrors*. Yet the fellow-citizens of Procopius were satisfied, by some short and partial experience, that the infection could not be gained by the closest conversation; and this persuasion might support the assiduity of friends or physicians in the care of the sick, whom inhuman prudence would otherwise have condemned to solitude and despair. But the fatal security, like the predestination of the Turks, must have aided the progress of the contagion; and those salutary precautions, to which Europe is indebted for her safety, were unknown to the government of Justinian. No restraints were imposed on the free and frequent intercourse of the Roman provinces: from Persia to France, the nations were mingled and infected by wars and emigrations; and the pestilential odour, which lurks for years in a bale of cotton, was imported, by the abuse of trade, into the most distant regions. The mode of its propagation is explained by the remark of Procopius himself, that it always spread from the sea-coast to the inland country: the most sequestered islands and mountains were successively visited; the places which had escaped the fury of its first passage, were alone exposed to the contagion of the ensuing year. The winds might diffuse that subtle venom; but unless the atmosphere previously

* Vide an account of the Plague at Marseilles, page 335.

disposed the body for its reception, the plague would soon expire in the cold or temperate climates of the earth. Such, however, was the temperament of the air, that the pestilence which burst forth in the fifteenth year of Justinian was not checked or alleviated by any difference of the seasons. In time, its first malignity was abated and dispersed ; the disease alternately languished and revived ; but it was not till the end of a calamitous period of fifty-two years, before this plague ceased its devastations. No facts have been preserved to sustain an account, or even a conjecture, of the numbers that perished in this extraordinary mortality. I only find, that, during three months, *five*, and at length *ten thousand* persons died each day at Constantinople ; that many cities of the East were left vacant, and that, in several districts of Italy, the harvest and the vintage withered on the ground. Gibbon, however, conjectures, that this plague, which began in the year A. D. 542, ending 594, carried off not less than *one hundred millions*.

Mead proves that the plague is contagious, from Thucydides, Lucretius, Aristotle, Galen, and common experience ; and he refutes the contrary opinion of the French physicians, who visited Marseilles in the year 1720. He incontestably proves, from the account of Russel, that the Plague raged in the Levant in 1719 ; that in 1720 a ship arrived with goods from this quarter, commanded
by

by Chataud, who had certain Turks passengers on board, with their luggage ; that soon after one of these died ; that two sailors, who were employed in throwing the corpse overboard, also sickened and died. A third sailor was seized with the same fever, and died ; as also the surgeon, who died. After this three other sailors fell sick of this same fever, and died. Two days from the arrival of this ship in Marseilles, an officer of quarantine, who came on board, died. Six porters, employed to open the goods on board, and air them, were seized with this disease also, and died. A priest who administered to the sick, and a surgeon of the Lazaretto, with part of his family, were infected also, and died. The apothecaries, their assistants, the house steward, with his sons, a cook, the scullions, the other porters, and the washer-women of the Lazaretto, in short, not one but fell victims to the devouring monster.

This fever afterwards appeared in the city. A woman from the rue de l'Escale being received into the principal hospital with the same fever, two of the nurses who assisted at her reception, and the matron who changed her linen, were taken ill next day, and died after a few hours illness. From them, the contagion spreading with dreadful rapidity, destroyed physicians, surgeons, apothecaries, confessors, and all the other officers and servants of the house, with the whole of the poor in the hospital, including in all upwards of
four

four hundred. Lastly, of two hundred and thirty galley-slaves, employed in going into the infected houses, and in burying the dead, two hundred and twenty perished in the space of ten or twelve days. If this is not contagious, I am at a loss to know what is. Besides this, they beheld the same fever, which in a few months swept away 50,000 inhabitants of a city that, at the present hour of prosperity and trade, contains no more than 90,000 souls. All that the French physicians oppose to this is, that neither they who were sent by the Regent to Marseilles, and who courageously exposed themselves, caught the disease, or their assistants. This, however, *only* proves, that all do not equally take the Plague, the reason of which will be the object of consideration in the ensuing section. They might as well assert, that the people who fall in battle are not killed, because some escape the danger.

What is styled by pre-eminence THE PLAGUE of London, may be traced to the same *source*. A violent plague had raged in Holland in the year 1663, on which account the importation of merchandize from that country was prohibited by the British Legislature in 1664. Notwithstanding this, however, it appears that the Plague had been actually *imported*; for in the close of the year 1664, two or three persons died in London with symptoms of the Plague; that is a *sense* of cold, succeeded by flushes of heat, often rigors,

prostration of strength, carbuncles, buboes, petechiæ, &c. Hereupon, says Hodges, some of their timorous neighbours, under apprehensions of a contagion, removed into the city of London, who unfortunately carried along with them the pestilential taint; whereby that disease, which was before in its infancy, in a family or two, suddenly got strength, and spread abroad its fatal venom; and merely for want of confining the persons first seized with it, the whole city was in a little time irrecoverably infected. Not unlike what happened the year following, when a small spark, from an unknown cause, for want of timely care, increased to such a flame, that neither the tears of the people, nor the profusion of their Thames, could extinguish, and which laid waste the greatest part of the city in three days time, where the altars themselves became so many victims, and the finest churches in the whole world carried up to heaven supplications in flames, while their marble pillars, wet with tears, melted like wax; nor were monuments secure from the inexorable flames, where many of their venerable remains passed a second martyrdom; the most august palaces were soon laid waste, and the flames seemed to be in a fatal engagement to destroy the great ornament of commerce; and the burning of all the commodities of the world together seemed a proper epitome of this conflagration: neither confederate crowns, nor the drawn swords of kings,

kings, could restrain its fanatic and rebellious rage ; large halls, stately houses, and the sheds of the poor, were together reduced to ashes ; the sun blushed to see himself set, and envied those flames the government of the night, which had rivalled him so many days :—as the city, I say, was next year burnt without any distinction, in like manner did this Plague spare no order, age, or sex ; the divine was taken, in the very exercise of his priestly office, to be inrolled amongst the saints above ; physicians could not find assistance in their own antidotes, but died in the administration of them to others ; and although the soldiery retreated from the field of death, and encamped out of the city, the contagion followed, and vanquished them ; many in their old age, others in their prime, sunk under its cruelties ; of the female sex most died, and hardly any children escaped ; and it was not uncommon to see an inheritance pass successively to three or four heirs in as many days ; the number of sextons were not sufficient to bury the dead ; the bells seemed hoarse with continual tolling, until at last they quite ceased ; the burying places would not hold the dead, but they were thrown into large pits dug in waste grounds, in heaps, thirty or forty together ; and it often happened, that those who attended the funerals of their friends one evening, were carried the next to their own long home :

—————Quis talia fando
Temperet à lachrymis?—————

As soon as the magistracy, to whom belonged the public care, saw how the contagion daily increased, and had now extended itself to several parishes, an order was immediately issued out to shut up all the infected houses, that neither relations nor acquaintance might unwarily receive it from them, and to keep the infected from carrying it about with them.

For this purpose, it is to be observed, that a law was made for marking the houses of infected persons with a red cross, having with it this subscription, LORD HAVE MERCY UPON US: and that a guard should there continually attend, both to hand to the sick the necessaries of food and medicine, and to restrain them from coming abroad until forty days after their recovery.

But although the Lord Mayor and all inferior officers readily and effectually put these orders in execution, yet it was to no purpose, for the Plague more and more increased; and the consternation of those who were thus separated from all society, unless with the infected, was inexpressible; and the dismal apprehensions it laid them under, made them but an easier prey to the devouring enemy. And this seclusion was on this account much the more intolerable, that if a fresh person was seized in the same house but a day before another had finished the quarantine, it
was

was to be performed over again; which occasioned such tedious confinements of sick and well together, as sometimes to cause the loss of the whole,

But what greatly contributed to the loss of people thus shut up was the wicked practices of nurses (for they are not to be mentioned but in the most bitter terms): *these wretches, out of greediness to plunder the dead, would strangle their patients, and charge it to the distemper in their throats; others would secretly convey the pestilential taint from sores of the infected to those who were well; and nothing indeed deterred these abandoned miscreants from prosecuting their avaricious purposes by all the methods their wickedness could invent*, who, although they were without witnesses to accuse them, yet it is not doubted but divine vengeance will overtake such wicked barbarities with due punishment: nay, some were remarkably struck from heaven in the perpetration of their crimes; and one particularly amongst many, as she was leaving the house of a family, all dead, loaded with her robberies, fell down dead under her burden in the streets: and the case of a worthy citizen was very remarkable, who being suspected dying by his nurse, was before-hand stripped by her; but recovering again, he came a second time into the world naked*.

Moreover,

* This is related upon the authority of Hodges, an eye-witness; and it is much to be lamented that this otherwise use-

Moreover, this shutting up infected houses made the neighbours fly from theirs, who otherwise might have been a help to them on many accounts ; and I verily believe that many who were lost might have now been alive, had not the tragical mark upon their door drove away proper assistances from them.

But to return : the infection had long doubtfully reigned, and continued through May and June with more or less severity, sometimes raging in one part, and then in another ; as often as the number of funerals decreased great hopes were conceived of its disappearance ; then, on a sudden again, their increase threw all into dejection, as if the whole city was soon to be unpeopled ; which uncertainty gave advantage to

ful order of people should not be chosen from a better description of persons. In the present times I have known the ear-rings torn from the ears of the dying, the cap removed in the act of dying, and a better one put on, the best clean linen put on the bed un-aired, as the perquisite after death, and the dying lifted out of bed, to prevent these from being stained by the last actions of death. Some have been actually jumped upon, to force the blood to the head, to make a better corpse ; and these over-anxious nurses for character, wash out the chambers of the sick at night, and only, they say, open a piece of the window. " Good God !" says one of this description, " would you put on a blister on the fair skin of her royal highness ? " " Dam it !" says Dr. E——, " her highness shall have the same chance as her washer-woman." " It is a pity to torment with medicine," says another, " or to starve the poor creature. One glass of wine can surely do nobody any harm," says a fourth. Thus it is, people are cheated out of their lives by the low ignorant tribe of nurses,

the

the distemper, because persons were more remiss in their provisions against it during such fluctuation.

As soon as the nature of the disease was thoroughly known, 40,000 servants were dismissed, and turned into the streets to perish, for no one would receive them into their houses; and the villagers near London drove them away with pitch-forks and fire-arms.

Sir JOHN LAWRENCE, "London's generous mayor," supported them all, as well as the needy who were sick, at first by expending his own fortune, till subscriptions could be solicited and received from all parts of the nation.

HE

Rais'd the weak head, and stay'd the parting
sigh,

Or with new life relum'd the swimming eye.

DR. DARWIN.

Yet after the chief of the people were fled, and thereby the nourishment of this cruel enemy had been in a great measure taken away, yet it raged still; and it soon returned with redoubled fury, and killed not by slow paces, but almost immediately upon seizure; not unlike what is often seen in battle, when, after some skirmishes of wings, and separate parties, the main bodies come to engage; so did this contagion at first only scatter about its arrows, but at last cover the whole city with death.

The

The government, however, to the duty of public prayers, neglected not to add what assistances might be had from medicine ; to which purpose his majesty, with the divine helps, called in also all that was human ; and, by his royal authority, commanded the college of physicians, of London, jointly, to write somewhat in English that might be a general directory in this calamitous exigence. Nor was it satisfactory to that honoured society to discharge their regards for the public with that only, but some were chosen out of their number, and appointed particularly to attend the infected on all occasions : two also out of the court of aldermen were required to see this hazardous task executed ; so that encouraged with all proper means, this province was cheerfully undertaken, and all possible caution was used fully to answer the intention. But this task was too much for four persons, and wanted rather the concurrence of the whole faculty : these were however ashamed to give it up, and used our utmost application therein ; but all their care and pains were eluded, for the disease, like the Hydra's heads, was no sooner extinguished in one family, but it broke out in many more with aggravations ; so that in a little time they found their task too great, and finally despaired of putting an entire stop to the infection.

In the months of August and September the contagion changed its former flow and languid
pace,

pace, and having as it were got master of all, made a most terrible slaughter, so that *three, four, or five thousand*, died in a week, and once *eight thousand*. Who can express the calamities of such times? In some houses carcases lay waiting for burial, and, in others, persons in their last agonies; in one room might be heard dying groans, in another the ravings of a delirium, and not far off relations and friends bewailing both their loss, and the dismal prospect of their own sudden departure: death was the sure midwife to all children, and infants passed immediately from the womb to the grave; who would not burst with grief, to see the stock for a future generation hang upon the breast of a dead mother? or the marriage-bed changed the first night into a sepulchre, and the unhappy pair meet with death in their first embraces? Some of the infected run about staggering like drunken men, and fall and expire in the streets; while others lie half-dead and comatous, but never to be waked but by the last trumpet; some lie vomiting, as if they had drunk poison; and others fell dead in the market, while they are buying necessaries for the support of life.

A pit, 40 feet long, 16 feet wide, and about 20 feet deep, was dug in the CHARTER-HOUSE; and in two weeks it received 1,114 bodies.

During this dreadful calamity there were instances of mothers carrying their own children to
those

those public graves, and of people delirious, or in despair for the loss of their friends, who *threw themselves alive into these pits.*

One smiling boy, her last sweet hope, she
warm'd,

Hush'd on her bosom, circled in her arms,
Daughter of woe!—ere morn, in vain carefs'd,
Clung the cold babe upon thy milkless breast,
With feeble cries thy *last sad aid* required,
Stretch'd its stiff limbs, and on thy lap expired!

.....
.....

Long with wide eye-lids on her child she
gazed,

And long to heaven their tearless orbs she
rais'd ;

Then with quick foot and throbbing heart
she found

Where CHARTREUSE open'd deep his holy
ground ;

Bore her last treasure through the midnight
gloom,

And kneeling dropp'd it in the mighty tomb ;
I follow next ! the frantic mourner said,

And living plung'd amid the festering dead.

DR. DARWIN.

About the beginning of September the disease was at the height, in the course of which month
more



C. R. Butler Del.

C. Caldwell Sculp.

THE FRANTIC MOTHER

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more than *twelve thousand* died in a week : but at length, that nothing might go untried to divert the contagion, it was ordered by the governors, who were left to superintend those calamitous affairs, (for the Court was then removed to Oxford) to burn fires in the streets for three days together ; yet while this was in debate, the physicians concerned were diffident of the success, as the air in itself was uninfected, and therefore rendered such a showy and expensive a project superfluous, and of no effect ; and these conjectures were supported by the authority of antiquity, and Hippocrates himself ; notwithstanding which, the fires were kindled in all the streets. But, alas ! the controversy was soon decided ; the most fatal night ensued, wherein more than *four thousand* expired. May posterity by this mistake be warned, and not, like empyricks, apply a costly remedy where they are ignorant of the effect.

In this account we should not neglect to mention, that the contagion spread its cruelties into the neighbouring counties ; for the citizens, which crowded in multitudes into the adjacent towns, carried the *infection* along with them, where it raged with equal fury ; so that the plague, which at first crept from one street to another, now reigned over whole counties, leaving hardly any place free from its ravage ; and the towns upon the
Thames

Thames were more severely handled, not, perhaps, from a great moisture in the air from thence, but from the tainted goods rather that were carried upon it : moreover, some cities and towns, of the most advantageous situation for a wholesome air, did notwithstanding feel the common ruin. Such was the rise, and such the progress of this cruel destroyer, which first began at London. But the worst part of the year being over, and the height of the disease, the Plague by slow degrees declined, as it had gradually made its first advances.

About the close of the year, that is, in the beginning of November, people grew more healthful, and such a different face was put upon the public, that although the funerals were yet frequent, yet many who had made most haste in retiring, made the most to return, and came into the city without fear ; infomuch, that in December they crowded back nearly as thick as they fled : the houses, which before were full of the dead, were now again inhabited by the living ; and the shops, which had been most part of the year shut up, were again opened, and the people again cheerfully went about their wonted affairs of trade and employ.

A TABLE OF THE FUNERALS

St. Giles in the Fields . . .	4457	3216	Lambeth Parish . . .	798	537	St. Mary, Islington . . .	696	593
St. Jackney Parish . . .	232	132	St. Leonard's, Shoreditch . . .	2669	1949	St. Mary, Whitechapel . . .	4766	3855
St. James, Clerkenwell . . .	1863	1977	St. Magdalen's, Bermondsey . . .	1943	1363	Rotherhithe Parish . . .	304	210
St. Katherine's, Tower . . .	956	601	St. Mary, Newington . . .	1272	1004	Stepney Parish . . .	8598	6583

In the 12 Parishes in the outer Parts, Total of the Funerals, 28,554—Died of the Plague, 21,420.

St. Clement's Danes . . .	1969	1319	St. Martin's in the Fields . . .	4804	2883	St. Margaret's, Westminster . . .	4710	3742
St. Paul, Covent-Garden . . .	408	261	St. Mary, Savoy . . .	303	198	Whereof at the Pest-house . . .	—	156

In the 5 Parishes of the City and Liberties of Westminster, Total of the Funerals, 12,194—Died of the Plague, 8,403.

TOTAL OF THE FUNERALS	97,306
DIED OF THE PLAGUE	68,596

Besides many of which no Account was given by the Parish-Clerks, and who were privately buried

Histories of the Plague, exhibiting the modifications it undergoes in different climates, must at all times and in all places be acceptable, if not to the public at large, at least to that class of persons who make the art of medicine their particular study and employ : and, to a country situated like our own, histories of this terrible disorder occurring but lately in the *northern parts of Europe*, are more particularly interesting, by holding up to our view a picture of what it probably would be, whenever it should visit us again, even at the present time. Such a picture is presented to us in the history of the Plague which depopulated Moscow, and other parts of the Russian empire, in the year 1771, which will form the subject of the following pages. What, at the present time, must give a greater degree of interest to such a subject, is the danger to which we are exposed of importing the pestilential contagion from America * on the one hand, and from Turkey and the Levant on the other : for, although the cold has, happily, suppressed for the present the pestilence which has been committing such

* Whatever doubts might have been entertained, as to the real nature of the yellow fever, on its first appearance in North America, I believe almost all physicians are now agreed that it is the *plague*, with such modifications as are easily referable to difference of climate and different mode of living. But whether it is, as the French wished to say of the plague of Marseilles, a *fevre putride* only, or the true plague, is immaterial, if it is proved to be fatal and infectious.

dreadful ravages at Philadelphia * and New York ; yet it is to be feared that it may be retained in many houses, and lie dormant in various goods, ready to break out again, whenever it shall be favoured by the weather : and no one who is acquainted with the nature of that contagion can deny the possibility of its importation from America into this country, either now or hereafter, by infected persons, or infected merchandize. On the other hand, are we not threatened with a similar danger from the East ? In executing the hostile operations which are going forwards in the Mediterranean and in Egypt, it seems scarcely possible for our fleets and armies to keep quite clear of contagion. No nation was ever long engaged in a war with the Turks, without taking the *Plague*. In this respect they are as much to be dreaded by their friends as their foes. If, in the present contest, Italy, and France, and England, shall escape this scourge, it will form an exception to past events, which all Europe must devoutly pray for.

In the year 1769 war was declared by the Russians against the Turks. Added to the miseries of war, the plague followed the devastations of fire and the sword ; and more perished by it in

* The history of one attack has been given ; and unless it had swelled out the work too much, the raging of the same Plague this last summer would have again arrested our attention, and excited our commiserations.

a few months, than by the arm of the murderer. Soon after the inroads of the Turks into Wallachia and Moldavia, the Plague showed itself, where it made dreadful ravages. The following summer it extended itself into Poland, and a multitude died. It then passed to Kiow, where it destroyed 4,000 souls. All communication between this place and the city of Moscow was cut off, and guards were stationed on all the great roads; but vigilance was of no avail.

Soldiers, who had been contending with the Turks, were obliged to be received into the military hospital at Moscow; and here the Plague broke out with all its dreadful retinue. Those who were seized with this direful distemper at first complain of a general sense of illness. Sometimes they exhibit marks of intoxication or drowsiness. They have a particular taste in their mouths, which soon turns to a bitter. To these succeed chills and hot fits, and, lastly, all the symptoms which characterize the plague. The disease sometimes terminates favourably by perspiration, before the appearance of purple spots, buboes, or carbuncles. The contagion is sometimes more rapid and more violent in its action; in that case the infected are suddenly seized after making a hearty meal, after a fit of anger, or too much bodily motion, with headache, nausea, and vomiting; the eyes become inflamed and watery (*lachrymans*), and pains are
felt

felt in those parts of the body where buboes and carbuncles are about to appear. There is no great degree of heat. The pulse is sometimes full and hard ; sometimes small, soft, and scarcely perceptible ; it often intermits ; and, what should be particularly noticed, it is often feeble. These symptoms are accompanied with lassitude, a white tongue, dry skin, urine of a pale yellow colour, or turbid, but without sediment ; frequently attended with a diarrhœa, which it is difficult to stop ; and lastly, with delirium, buboes, carbuncles, and petechiæ *.

The military surgeon first fell a victim, and each nurse in turn, until all of them, to the number of eleven, perished ; nor did it cease until twenty-four persons had been seized with it, only two of whom recovered.

The house, with all its furniture, was ordered to be burnt, which was accomplished ; the dead were buried at a distance from the city : but this proved of slight avail, it broke out afresh ; and what added to the *contagion* was a riot of the populace, which began on the 15th of September, late in the evening, when a frantic mob, chiefly composed of women, broke open the pest-houses and quarantine-hospitals, renewing all the religious ceremonies which it is customary with them

* This description is from Baron Arch, first physician to the Russian army.

to perform at the bed-side of the sick *, and digging up the dead bodies, and burying them afresh in the city. Agreeably to their ancient custom, the people began again to embrace the dead, despising all manner of precaution, which they declared to be of no avail, "as the public calamity" (I repeat their own words) "was sent by God, to punish them for having neglected their ancient forms of worship." They further insisted, that as it was pre-ordained who should and who should not die, they must await their destiny; therefore, that all endeavours to avoid the contagion were only a trouble to themselves, and an insult to the Divinity, whose wrath was only to be appeased by their refusing all human assistance. In their paroxysm of phrensy, the populace attempted to wreak their vengeance upon those who had laboured for their preservation. After they had sacrificed one victim to their blind rage, they fought for the other physicians and surgeons; all of whom happily escaped. *General Yeropkin*, with a small party of soldiers, drawn together as speedily as possible, dispersed the mob, and restored tranquillity in a few days, after which every thing was placed on its former footing.

* Besides praying by them in the ordinary manner, it is customary, in Russia, to carry in great pomp to the sick the images of their saints, which every person present kisses in rotation.

This vast concourse and intermixture of the healthy and infected, caused the contagion to spread to such a degree, that from this time the daily number of deaths amounted to one thousand two hundred, and upwards, per diem ! The number of deaths kept at this rate for some days, and then diminished to one thousand. As the populace, during the riots, had re-established all the religious ceremonies customary on burying the dead, almost all their priests, deacons, and other ecclesiastics, fell victims to the contagion.

The people, brought to a sense of their duty, partly by the rigorous measures employed against them, and partly by seeing that the public calamity had been aggravated by their disorderly proceedings, now began to implore our medical assistance. The monasteries and other pest-houses were full ; the sick were no longer carried thither ; the contagion had spread every where ; inasmuch that the city itself might be considered as one entire hospital.

At this time Prince Orlov arrived at Moscow, invested with full powers by the empress. Having taken the necessary steps to prevent all further popular commotions, the Count selected, from all our papers, what appeared of most moment, and drew up a set of regulations, as well for the treatment of the sick, as for the keeping
of

of those who were yet well free from infection. He also ordered new hospitals to be immediately built for the reception of the poor seized with the Plague*.

The weather was intensely cold during the whole of the winter. In order to destroy all remains of the contagion, the doors and windows of the rooms, in which there had been any persons ill of the Plague, were broken, and the rooms were fumigated with the antipestilential powder†; the old wooden houses were entirely demolished.

At the close of the year 1771, this dreadful scourge ceased, by the blessing of God, at Moscow, and in every other part of the Russian empire. Besides the three towns before-mentioned, upwards of four hundred villages had been infected.

The effects of the Plague were traced in every part of the city. Even as late as the month of February, 1772, upwards of four hundred dead bodies were discovered, which had been secretly buried the year before in private houses. So

* In Russia it is no uncommon thing to have a large edifice built of wood in a few days. See Coxe's Travels. To persons unacquainted with this fact, the erecting of new hospitals might seem a very tardy measure for checking the progress of the plague.

† Vide the next section, On Prevention.

powerful is cold in destroying the contagion, that not one of those who were employed in digging up these bodies, and carrying them to the public burying-grounds, became infected*.

The total number of persons carried off by the Plague amounted, according to the reports transmitted to the Senate and Council of Health, to upwards of 70,000; more than 22,000 of this number of deaths happened in the month of September alone. If we add to these the private and clandestine interments †, the whole number

* For carrying away and burying the dead, criminals capitally convicted or condemned to hard labour, were at first employed; but afterwards, when these were not sufficient for the purpose, the poor were hired to perform this service. Each was provided with a cloak, gloves, and a mask, made of oiled cloth; and they were cautioned never to touch a dead body with their bare hands. But they would not attend to these precautions, believing it to be impossible to be hurt by merely touching the bodies or clothes of the dead, and attributing the effects of the contagion to an inevitable destiny. We lost before this time thousands of these people, says Dr. De Mertens, who seldom remained well beyond a week. I was informed by the Inspectors of Health, that most of them fell ill about the fourth or fifth day.

† The number of these was by no means inconsiderable; for during the height of the Plague, there was scarcely a sufficient number of men, horses, and carts, to carry off the dead; many remained uninterred for two or three days, and were at length taken away by their relations, friends, or poor people hired for that purpose. Many of these could not be registered, besides numbers of others who were buried in secret, and whose illness was never reported to the senate.

of deaths in Moscow will amount to 80,000 : and reckoning those who died in upwards of four hundred villages, and in the three towns of Tula, Yaroslaw, and Kalomna (or Kaluga), it will follow that this Plague swept off altogether as many as 100,000 persons !

SECT. L.

OF PERSONS MOST LIABLE TO TAKE INFECTION.

MANY in the times of contagion have recommended *high*, others *low living* ; but both as producing *debility*—the former of the *direct*, the other of the *indirect* kind, have been blind leaders of the blind : for the constitutions most liable to be acted upon, are those where *debility* prevails. Hence, according to the accurate observations of Dr. Rush, the yellow fever invaded chiefly those where there had been—

1. *Fatigue of body*, induced by labour, by walking, riding, watching, or the like exercises. It was labour which excited the disease so universally among the lower class of people. A long walk often induced it. Few escaped it after a day, or even a few hours spent in gunning. A hard trotting horse brought it on two of my patients. Perhaps, riding on horseback, and in the sun, was the exciting cause of the disease in most of the citizens and strangers who were affected by it in their flight from the city. A fall excited it in a girl ; and a stroke upon the head excited it in a young man who came under my care. Many people were seized with the disorder in consequence of their exertions on the night of the

the 7th of September, in extinguishing the fire which consumed Mr. Dobson's printing-office; and even the less violent exercise of working the fire engines, for the purpose of laying the dust in the streets, added frequently to the number of the sick.

2. *Heat*, from every cause, but more especially the heat of the sun, was a very common exciting cause of the disorder. It aided the stimulus of the contagion in bringing on indirect debility. The register of the weather, during the latter end of August, the whole of September, and the first two weeks in October, will shew how much the heat of the sun must have contributed to excite the disease, more especially among labouring people. The heat of common fires likewise became a frequent cause of the activity of the contagion, where it had been received into the body; hence the greater mortality of the disease among bakers, blacksmiths, and hatters, than among any other class of people.

3. *Intemperance in eating or drinking*. A plentiful meal, and a few extra-glasses of wine, seldom failed of exciting the fever. But where the body was strongly impregnated with the contagion, even the smallest deviation from the customary stimulus of diet, in respect to quality or quantity, roused the contagion into action. A meat supper in one, and eating oysters for supper in another of my patients, produced the
disease,

disease. Half an ounce of meat rendered the contagion active in a lady who had lived, by my advice, for two weeks upon milk and vegetables. A supper of salad, dressed after the French fashion, excited it in one of Dr. Mease's patients. It is because men are more predisposed by their constitution and employments to indirect debility than women, and that young and middle aged persons are more predisposed to this species of debility than old people, that more men than women, and more young than old people, were affected by the disorder.

There were several exciting causes of the disease, which acted by inducing *direct debility* upon the system. It may appear difficult, at first sight, to explain how causes so opposite in their nature, as *indirect* and *direct* debility, should produce exactly the same effect. The difficulty vanishes when we reflect that the abstraction of one stimulus, by accumulating the excitability of the system, increases the force of those which remain. The contagion, when received into the body, was frequently innocent, until it was aided by the addition of a new, or by the abstraction of a customary stimulus. The causes which acted in this way were—

1. *Fear*. This passion debilitates, only because it abstracts its antagonist passion of courage. In many people the disease was excited by a sudden paroxysm of fear; but I saw some remarkable instances.

instances where timid people escaped the disease, although they were constantly exposed to it. Perhaps a moderate degree of fear served to balance the tendency of the system to indirect debility from the excessive stimulus of the contagion, and thereby to preserve it in a state of healthy equilibrium. I am certain that moderate fear did no harm, after the disease was formed, in those cases where a morbid excess of action, or prostration of the moving powers from excess of stimulus, had taken place. It was an early discovery of this fact which led me not to conceal from my patients the true name of this fever, when I was called to them on the day of their being attacked by it. The fear greatly co-operated with some of my remedies in reducing the morbid excitement of the arterial system. A total absence of fear, however, in many cases that came under my notice, did not prevent an attack of the fever.

2. *Grief.* It was remarkable, that the greatest concentration of the contagion did not produce the disease in many instances in the attendants upon the sick, while there was a hope of their recovery. The grief which followed the extinction of hope, by death, frequently produced the disease within a day or two afterwards; and that not in one person only, but often in most of the near relations of the deceased. But the disease was also produced by a change in the state
of

of the mind directly opposite to that which has been mentioned. Many persons, that attended patients who recovered, were seized with the disorder a day or two after they were relieved from the toils and anxiety of nursing. The collapse of the mind from the abstraction of the stimulus of hope and desire, by their ample gratification, probably produced that debility and loss of the equilibrium in the system, which favoured the activity of the contagion.

The effects of both the states of mind which have been described have been happily illustrated by two facts which are recorded by Dr. Jackson*. He tells us that the garrisons of Savannah and York Town were both healthy during the siege of those towns; but that the former became sickly as soon as the French and American armies retreated from before it, and the latter immediately after its capitulation.

S. Cold. It will not be necessary to pause here, to prove that cold is a negative quality, and produced only by the absence of heat. Its action in exciting the disease depended upon the diminution of the necessary and natural heat of the body, and thereby so far destroying the equilibrium of the system, as to enable the contagion to produce excessive or convulsive motions in the blood vessels. The night air, even in the warm

* Treatise on the Fevers of Jamaica, page 298.

month of September, was often so cool, as to excite the disease where the dress and bed-cloaths were not accommodated to it *. It was excited in one case by a person's only wetting his feet in the month of October, and neglecting afterwards to change his shoes and stockings. Every change in the weather, that was short of producing frost, evidently increased the number of sick people. This was obvious after the 18th and 19th of September, when the mercury fell to 44° and 45° . The hopes of the city received a severe disappointment upon this occasion, for I well recollect there was a general expectation that this change in the weather would have checked the disorder. The same increase of the number of sick was observed to follow the cool weather which succeeded the 6th and 7th of October, on which days the mercury fell to 43° and 46° .

It was observed, that those persons who were habitually exposed to the cool air were less liable to the disease than others. I ascribe it to the habitual impression of the cool night air upon the bodies of the city watchmen, that only four or five of them, out of twenty-five, were affected by disorder.

* Lind frequently remarks in his work on the Diseases of Warm Climates, that persons who had quitted their ships and stopt on shore, were soon after attacked with fever: whereas those who were on the very same insalubrious spot, only during the day-time, returned back uninjured.

After

After the body had been heated by violent exercise, a breeze of cool air sometimes excited the disease in those cases where there had been no change in the temperature of the weather.

4. *Sleep.* A great proportion of all who were affected by this fever were attacked in the night. Sleep induced direct debility, and thereby disposed the contagion, which floated in the blood, to act with such force upon the system as to destroy its equilibrium, and thus to excite a fever. The influence of sleep, as a predisposing and exciting cause, was often assisted by the want of bed-cloaths, suited to the midnight or morning coolness of the air.

5. *Immoderate Evacuations.* The efficacy of moderate purging and bleeding, in preventing the disease, led some people to use those remedies in an excess, which both predisposed to the disease and excited it. The morbid effects of these evacuations were much aided by fear; for it was this passion which perverted the judgment in such a manner, as to lead to the excessive use of remedies, which, to be effectual, should only be used in moderate quantities.

Hence is the necessity, in times of contagion, of a knowledge, and careful observance of, the laws of the animal œconomy*.

* These have been before amply discussed in Vol. I. II. and III.

Besides fumigation, various remedies have been recommended as preservatives, external and internal. Of the first kind, some are to be carried in the hand, or worn about the body, or otherwise applied externally. Little need be said of the ingredients of which the small bags, balls, ointments, or amulets, are composed, as they have no just claims to the title of antidotes, and are for the most part either the offspring of empirical craft, or are mere innocent devices, to give confidence to those under the necessity of approaching the sick. In this last view, such as can do no harm may be admitted, in compliance with popular notions; but amulets of poisonous or doubtful quality should be admitted with more caution, or rejected *. Some of the perfumes ordered by the College, are perhaps as proper as any; but their forms should be rendered more simple, excluding costly ingredients, or such as are procured with difficulty. No difference, perhaps, should be made between compositions of this kind intended for the rich or the poor; the latter, by their situations in life, stand most exposed, and should not have their confidence in the defensive lessened, by the reflection that their poverty must deprive them of the most efficacious. The pomander prescribed for the richer

* Muratori, lib. ii. c. p. 129. See also a Treatise of the Plague by Thomas Lodge, M. D. Lond. 1603.

fort, by the College, contains lignum aloes *, which can be of no possible use when inclosed in an ivory box, because it emits its scent only when much heated or burning.

Many of the people of Aleppo carry a little ball of labdanum in their hands, or smell to vinegar in which rue has been steeped.

As to internal preservatives, the number of simple, recommended under the title of antidotes, is much greater, and the compound forms are in general most unjustifiably complex. Medical books are filled with them, and some with eulogies on their approved efficacy. The reader may find a copious collection in Muratori †, upon which it is needless to comment.

The College at London, in 1665, made some alterations on the head of Inward Medicines, leaving out a very few articles of the old forms, and substituting others in their place, some of which do not appear to have any just claim to superior efficacy. Among the principal new compositions introduced, are some medicated ales, distilled waters, and two or three electuaries ; of all which the ingredients are superfluously multiplied. Among the old compositions retained, is one calculated for the rich, and which stands disgraced by the following ingredients;—oriental

* Advice of the Physicians, xii.

† Muratori, lib. ii. c. iii.

bezoar, pearl, hyacinth stone, unicorn's horn, and lignum aloes ; the proportion of the last article being about three grains to four hundred and fifty of the other ingredients.

In the Epistle, dedicatory, prefixed to the advice of the College in 1665, it is said, " We
 " have been tender in omitting many forms and
 " prescripts, which by reason of the plainness and
 " homeliness of them we looked upon as very
 " obnoxious, to be censured and vilified, especially
 " by persons pretending to rare preparations and
 " secrets : we considered that our predeceffors
 " (amongst whom were then the most eminent
 " physicians in England, and such as had experience of plagues in their times, raging to a far
 " greater height than through God's mercy any
 " hath done since) might see just cause, upon their
 " experience and success to bring them in."

But it is to be hoped, whenever the College come to revise their public advice, that the same scrupulous delicacy will no longer restrain their corrections. Indeed the same reason for delicacy no longer exists ; for the reigning prejudices in favour of names and authorities, which at that time rendered a cautious respect in some degree necessary, have, in the long interval which Britain has providentially enjoyed free from the plague, either been consigned to oblivion, or retain little of their former influence over the minds of men,

The reformation that in the present century has taken place in most of the European dispensaries, more especially in Britain, has disencumbered the *Materia Medica* of many useless articles ; and the later improvements in pharmacy, joined with the modern more simple mode of prescription, have prepared the way for high improvement in medical directions for the prevention and cure of the plague, without danger of offending popular opinions.

It seems highly expedient, that some compositions, under the denomination of preservatives, should be prepared, with the sanction of the College, and sold at easy rates. Many persons will never think themselves secure without something of that kind, and where they cannot find antidotes regularly recommended, will be the more easily tempted to have recourse to every boasting impostor who offers his nostrum : of which numbers, at such times, are always ready to take advantage of the public credulity*.

At the same time it must be confessed, that preservative internal remedies do not appear to be necessary for persons in good health ; and, except where there is a strong prepossession in their favour, may safely be omitted. A temperate course of life, and temperate indulgence in customary liquors, promise every advantage that

* Hodges's *Loimologia*, p. 21. *Journal of the Plague Year*, p. 36.

can be expected from cordials and stomachics. To valetudinarians, hypochondriacal persons, and others of weak nerves, or disturbed digestion, something medicinal, besides wine, may perhaps become requisite for the bowels, and for preserving a constant and salutary moisture on the surface of the skin; but inanition, and sudden changes in diet, ought to be avoided; and all evacuations ought in general to be proscribed, in respect to those who are obliged to go into the way of infection.

Terror, despondence, and other *debilitating* affections of the mind, have been universally held of most dangerous tendency in times of pestilence. On the contrary, a regular flow of spirits, a temper not given to anticipate evils, or, when they happen, to brood over them, and a lively hope of escaping the infection, are considered as the best safeguards against contagion*. But these are not in the power of medicine to bestow; they are the blessings of natural constitution; and, where wanting, must be sought in a cheerful association with others who possess them, and by engagements that divert the mind from the contemplation of melancholy objects.

* Muratori, lib. iii. cap. ii.

SECT LI.

OF THE LIMITED SPHERE OF ACTION OF PUTRID
MIASMS.

HAVING established a house in the neighbourhood of this city (Lyons), says Dr. Ryan, for the reception of inoculated patients, many people, falsely persuaded that a person infected by a good kind of small-pox would have the distemper in the like favourable manner, brought their children to visit my patients, with an intention that they should be infected by a communication with those who were inoculated. After many unsuccessful attempts to convince these people of their error, seeing that they rejected my offers to inoculate these children, and not doubting, in spite of my arguments and express prohibition, that sooner or later they would seize another, and perhaps a less favourable opportunity, I exposed them to the following experiments, after they had undergone a due course of preparation.

I placed a large doffel of cotton, soaked in variolous matter, on the middle of an oval table, whose least diameter was three feet: I seated six children around it, three on each side of the table, in such a manner, that all were situated within half a yard of the infectious cotton. This experiment

rimment was sometimes made in the open air, sometimes in the house: I took care to renew, every second day, both the variolous matter, and the substance which contained it: I alternately used the poison taken from the inoculated, and from the casual small-pox; and I copiously impregnated with it balls of cotton, lint, wool, and silk. This operation, repeated during a whole week, morning, noon, and night, for an hour at each sitting, produced no effect.

I then sent away the children, desiring the parents to acquaint me, in case any indisposition appeared, and to bring them to me a fortnight afterwards, although no alteration should have taken place in their health. I declare that, not only for that term, but for many succeeding months, during which I took care frequently to visit them, they all enjoyed perfect health. It was not till nine months after this time that four of these children had a mild kind of small-pox.

Having concluded from these experiments, that the children could not have escaped infection, but because the variolous matter might have lost that spring, and that degree of energy, which, perhaps, it may possess on arising immediately from the human body, I placed a person, in the eruptive fever of the small-pox by inoculation, at the distance of about half a yard from four children properly prepared; each exposure continued one hour, and was repeated daily for a

B b 2

fortnight,

fortnight, reckoning from the commencement of the fever till the pustules were become perfectly dry : not one of the four received the infection. Two months afterwards I inoculated three of these children : they had the distemper in a very mild manner, and recovered without difficulty.

Like experiments made with the blood, and with the slimy matter which runs from the eyes and the nose of persons attacked by the measles, have uniformly had the same result.

I can, says Dr. Currie, bring many facts, to prove that the contagion has spread a very little way into the atmosphere in situations where many patients have been confined together, and consequently the quantity of effluvia greatly multiplied. These are chiefly from the accounts of our Guinea voyages, in which the small-pox used formerly to make, at times, dreadful havoc among the slaves. The practice, however, of late years has been, immediately on the appearance of the casual disease on ship-board, to inoculate the whole cargo ; and nothing can speak more forcibly the safety of inoculation, than the complete success with which it has generally been attended on persons of all ages, entirely unprepared, and under circumstances every way unfavourable. As however a general inoculation, under such circumstances, is always followed by unpleasant, and sometimes, though rarely, by destructive consequences, it is not now uncommon to separate
the

the diseased persons, and to trust to means of prevention for the safety of the rest. These frequently, perhaps I might say generally, succeed, provided the voyage is performed with light and favourable winds, which is necessary to enable them to make the separation complete. An instance of this has just occurred in a Guineaman, called the Golden Age; soon after she left the coast of Africa the small-pox appeared, and, before the disease was known, eight persons were affected; the whole were immediately brought on deck, their apartments washed and ventilated with the greatest care, and the eight persons ill were placed in the main-top about twenty feet from the deck, where they regularly passed through the disease. Before coming down, they were washed, the contagion was extinguished, and the whole cargo, as well as crew, arrived in perfect health in the West Indies. During all this time, the slaves, as is usual, passed the day near them; but though all were supposed liable to the disease, not one of two hundred and upwards thus exposed received the infection. My friend Mr. Beg, formerly surgeon, afterwards master of a Guineaman, and now a considerable merchant here, informs me, that, in one of his voyages, he practised the same method of stopping the contagion of this disease, and with the same success. He acquaints me also, that twice, when the small-pox appeared among the slaves, while they

they were at anchor on the coast, he put the infected persons in a boat a-stern of the ship, and effectually secured the people on board from the contagion. Many similar facts might be collected; and, as I see they may illustrate and inforce your doctrines, I will attend to the subject. The same holds good of other diseases.

In April, 1779, Master Plumbe, the son of a gentleman of fortune near Liverpool, was attacked, in a dangerous degree, with a scarlet fever and sore throat, in the house of his school-master, the Rev. Mr. Vanbrugh, at Chester. There were at the time thirty-seven young gentlemen, boarders in the family, most of whom, it is highly probable, were disposed to receive this dangerous contagion. My patient's chamber, says Dr. Haygarth, was situated in the middle of the house, at the landing of the first pair of stairs: all the scholars went close past his door several times a day. At this season, Winchester, and several other large schools in England, sent home and dispersed their scholars, on account of this distemper, which had alarmingly spread among them. Whether this measure, with all its inconveniencies, was not advisable, became a very serious question. The numerous facts which I had then collected, to prove that the variolous infection, though probably the most virulent we are acquainted with in this climate, exerted its baneful influence at but a small distance only from the poison, encouraged me to hope

hope that the contagion of a scarlet fever was incapable of producing more extensive mischief. The rules of prevention were placed on the door of the patient's chamber, and rigid attention to their faithful observance was required. The event fully justified my hopes. Though all the thirty-seven scholars remained in the same house and family, during the whole disease, yet not one of them was infected.

I do not recollect any observations recorded by authors to determine what proportion of mankind are liable to the attack of the scarlet fever. In October 1778, out of forty young ladies at a boarding-school in Chester, all but four had the distemper, twelve very severely, and two most dangerously. This comparative statement of facts, which happened in two schools, shews, beyond all reasonable doubt, to what a little distance from the poison the infectious miasms extend, and that the rules of prevention are, in this respect, fully adequate to their purpose.

This knowledge is extremely useful in making us acquainted with the real state of our danger; for like a city besieged, even before the besiegers approach near enough to do any damage, every thing is in the utmost confusion: so I have known a whole house deserted on the appearance of a putrid fever, and as much precipitation in flight as if the house had been on fire. This knowledge should also reconcile those who happen to be

be in a house where the Plague rages, and the state places centinels at the door of the infected houses, forbidding any one to leave them. The danger is not so great as they imagine. It may be avoided by a few simple rules. These consist in avoiding the sphere of infection, and contact of any clothes that has been within this sphere*.

* Vide Dr. Haygarth on the Small-pox, who has been indefatigable in removing the prejudices of mankind, and clearing this interesting subject.

PRACTICAL OBSERVATIONS.

SECT. LI.**THE METHOD OF DESTROYING CONTAGION,**

THE present system of quarantine proceeds on a supposition, that infected goods are capable of being purified, in a certain time, by ventilation. If this be not supposed, quarantine is no more than a very undecisive trial whether the goods be really contagious; I say undecisive, because though the goods be really contagious, those employed in unloading or opening them may possibly escape unhurt, in like manner as it sometimes happens, that of several persons frequenting the chamber of a patient in the plague, no one is infected. It is certain, however, a strong presumption either of the goods being not tainted, or of the state of the air being not favourable to contagion, when those employed in handling them receive no harm. But, besides this, it is the common opinion, that the pestiferous effluvia, conveyed in substances close packed up, when opened, either evaporate during a long exposure to the air, or are otherwise destroyed by its agency. In consequence of which,

which, those who assist at the first opening of the goods are considered as being in much more danger of infection, than those who re-pack them after an airing of forty or fifty days.

Quarantine, however, is not merely an experiment to determine whether the merchandize retain infection; but the ventilation, during the quarantine, is reported to be the means of purifying them, if they happen to be infectious. The terms established for ventilation may appear to be unnecessarily long. It is much to be wished, that means could be devised for the expurgation of merchandize more expeditiously than by simple exposure to the air; and perhaps fumigation might be attempted here with some prospect of success,

“ Wherever infection lurks, and in whatever materials it is harboured, the admission of the purest air, or the most perfect ventilation, will often not avail either in removing or abating its activity, says Dr. Lind. It now gives me the highest satisfaction to affirm, that I seldom or never knew a proper application of fumes of BRIMSTONE to be unsuccessful, in producing the happy consequence of effectually purifying all tainted places, materials, and substances*.

“ It is not to be doubted but that, excepting the true plague, there has been an infection

* Lind's Dissertation on Fevers and Infection, p. 225. He also at times added the OXYD OF ARSENIC,

“ fully

“ fully as pestilential, and as mortal, in some
 “ ships, as in any other place whatever ; yet I
 “ never heard of any ship, which after having
 “ been carefully and properly fumigated, did not
 “ immediately become healthy. And if after-
 “ wards they turned sickly, it was easy to trace
 “ that sickness from other infected ships, jails,
 “ and the like places.”

After describing the mode of fumigating ships, he adds, “ From the known and experienced
 “ efficacy of these processes, it appears that fire
 “ and smoke are the most powerful agents for
 “ annihilating infection; and it may be presumed
 “ even the plague itself. I have known in several
 “ ships, where there are the fairest opportunities
 “ of trying things of this nature, that the con-
 “ tagion of the small-pox has been entirely stop-
 “ ped by means of wood fires, sprinkled with
 “ brimstone, kept burning and closely confined
 “ in the infected place*.

“ I shall lastly deliver my sentiments with re-
 “ gard to the purification of goods, moveables,
 “ clothes, &c. which are suspected to harbour
 “ contagion ; and I cannot but take notice, that
 “ the usual custom of only unpacking and ex-
 “ posing such materials to the open air, is, in
 “ many instances, insufficient to destroy the latent
 “ seeds of the disease†.”

* Lind's Dissertation on Fevers and Infection, page 227, 229,
 231.

† Ibid. p. 235.

Muratori has given us an ample description of the purification of goods by fumigation.

The infected apparel, linen, sheets, coverlets, &c. are to be spread out upon lines, stretched across the chamber. The doors, windows, and chimneys are then to be shut up, so as to prevent the smoke from making its escape too soon. When this is done, four or five pounds of dry hay are placed at bottom, and upon that are strewed four handfuls of the ingredients in powder, which being covered with a little more hay, the whole is sprinkled with VINEGAR, in order that the materials may not be consumed too fast. The fire is applied in several places at the bottom, the hay being raised and supported by a poker; and after the whole is well kindled, the person employed, immediately retiring, takes care to shut the door. The house, or chamber, remains close shut up three days; after which the house and goods are carefully aired.

The combustible materials, I suppose, are laid upon a brasier, which may answer very well in Italy, where the floors are generally brick or plaster; but for boarded floors, the fire must be guarded by a better apparatus, to prevent accidents.

The method of smoking ships, described by Dr. Lind, seems preferable to this. After carefully stopping up all the openings and crevices, a number of iron pots, properly secured, are placed in the hold, &c. Each of these contains a layer of charcoal at the bottom, then a
layer

layer of brimstone, and so alternately three or four layers of each. On the top, some oakum, dipped in tar, is laid to serve as a match*.

A great variety of substances have been recommended for the purpose of fumigation, and a number of compositions have been employed, consisting of a farrago of ingredients which, though they enhance the cost, add nothing perhaps to the efficacy of the composition. The Italian composition for fumigation might therefore be reformed, leaving several of the more costly ingredients out, without impairing its virtue. The forms mentioned by Muratori might be thus reduced†.

SULPHUR, 5 pounds.

ORPIMENT, 2 pounds.

Common Frankincense, and

Juniper Berries, of each 3 pounds.

To these, after being reduced to a powder, are added :

Shavings of the Pine Tree, 5 pounds.

Bran, 20 pounds.

In like manner a still stronger fumigation is prepared, by increasing the proportion of SULPHUR, and adding one pound of OXYD OF ARSENICK.

The first of these two fumigations is used for the purification of infected houses ; the second,

* Lind's Dissertation on Fevers, 2d edit. p. 228.

† Muratori, lib. i. cap. ix. p. 72.

for Lazarettos, sepulchres, and stuff more strongly tainted than common furniture. A third fumigation, intended for persons and their apparel, who are obliged to approach the sick, is composed of SULPHUR, aromatic gums, and spiceries, without arsenick*.

Muratori, after remarking that fumigation was used anciently in the pestilence, says, the practice was brought into more general use by P. Maurizio da Tolono, a Capuchin, who had great success with it in the plague of Genoa, in 1657. He observes further, that Francesco Ranchino, and others, were of opinion, that fetid and poisonous fumes were the most effectual. Declining however a decision on this point, he refers to the experience of the Capuchin, who delivers himself to the following purpose: "That
 " his milder fumigation, intended for persons
 " obliged to go among the infected, or other-
 " wise to expose themselves to danger, was an
 " admirable preservative, and was used with re-
 " markable success in Genoa, in 1657; the fumi-
 " gation being applied to the person, and his
 " clothes, before coming out from his house."
 —He adds further, " that the application of his
 " other fumigations rendered the former prac-
 " tice, of burning infected or suspected goods,
 " unnecessary; as also the shutting up infected

* Muratori, lib. i. cap. ix. p. 73.

" houses,

" houses, which being abandoned by their inha-
 " bitants, were left exposed to the depredation
 " of robbers. He acknowledges that infected
 " goods may be purified by proper exposure to
 " the air, but then a space of forty days is re-
 " quisite for their purgation, during which time
 " they are subject to many inconveniencies,
 " besides being spoilt by the rain, or stolen by
 " thieves: whereas, *by his method, twenty-four*
 " *hours are sufficient for the purifying not only houses,*
 " *with their furniture, but even Lazarettos, and the*
 " *infected beds of the sick.*" Muratori subjoins
 two instances of the good effect of fumigation, at
 Venice, in 1576; and at Malta, in 1675; and
 gives several instances of the bad consequences
 of the neglect of such precautions, at Rome, in
 1656; at Marseilles, in 1649; and at Modena,
 in 1630, also at Palermo, Florence, &c*.

Notwithstanding these *authorities* in favour of
 fumigation, Dr. Mead appears to think the prac-
 tice injudicious, if not prejudicial, the fumes of
 VINEGAR, and perhaps BRIMSTONE ex-
 cepted, founding this opinion chiefly on the
 practice of the Arabians, who, he says, recom-
 mend the keeping the houses cool and *airy*, and
 strewing them with cooling herbs, as roses, violets,
 water lilies, &c. sprinkling them at the same
 time with VINEGAR. But I apprehend there

* Muratori, lib. i. c. ix.

is a little inaccuracy in this representation of the Arabian practice; for though the Arab writers certainly recommend the keeping the houses cool, &c. they are far from condemning fumigation with aromatic herbs and gums. The fact is, the Arabians made a very material distinction, which the Doctor seems not to have attended to, namely, between the regimen for persons lying sick in pestilential disorders, and persons, yet in good health, using *precautions* for their preservation.

I have collected the above authorities, with a view to rescue the practice of *fumigation*, as a means of purifying infected goods, from the derogation implied in Doctor Mead's manner of expressing himself on the subject; and I am also obliged to differ from him in what follows: "when the sick families are removed, all the goods of the houses, in which they were, should be burnt, or rather buried deep under ground - - - and moreover, the houses themselves may likewise be destroyed by fire, if that can conveniently be done, that is, if they are remote enough from others; otherwise it may suffice to have them thoroughly cleansed, and then plastered up*." The burning of houses in a town must, for the most part, be attended with danger; and the burning of furniture, &c. has been found by experience to occasion dangerous concealment, and theft, besides many other inconveniences.

* Mead, p. 108.

Since there is no disorder to which human nature is subject, more destructive or alarming than contagious fever, the humane reader will not require an apology for delaying his attention upon so important a point, more especially as it confers the highest honour on the present enlightened age, and holds out a prospect that one of the greatest scourges to mankind may be at last banished from the earth, never again to rear its truly formidable head.

The commission at Moscow having, in the year 1770, invented a *fumigation-powder*, which, from several lesser experiments, had proved efficacious in preventing the infection of the plague; in order more fully to ascertain its virtue in that respect, it was determined, towards the end of the year, that ten malefactors under sentence of death should, without undergoing any other precautions than the fumigations, be confined three weeks in a Lazaretto, be laid upon the beds, and dressed in the clothes, which had been used by persons sick, dying, and even dead, of the plague in the hospital. The experiment was accordingly tried, and *none of the ten malefactors were then infected, or have been since ill.* The fumigation-powder is prepared as follows.

Powder of the first strength.—Take leaves of juniper, juniper-berries pounded, ears of wheat, guaiacum-wood pounded, of each six pounds; common *saltpetre* pounded, eight pounds; SUL-

PHUR pounded, six pounds; Smyrna tar, or myrrh, two pounds; mix all the above ingredients together, which will produce a pood of the powder of fumigation of the first strength. [*N. B.* A pood is 40 pounds Russian, which are equal to 35 pounds and a half or 36 pounds English avoirdupoise.]

Powder of the second strength.—Take southern-wood cut into small pieces, four pounds; juniper-berries pounded, three pounds; common **SALTPETRE** pounded, four pounds; **SULPHUR** pounded, two pounds and a half; Smyrna tar, or myrrh, one pound and a half; mix the above together, which will produce half a pood of the powder of fumigation of the second strength.

Odoriferous powder.—Take the root called *kal-mus*, cut into small pieces, three pounds; leaves of juniper cut into small pieces, four pounds; frankincense pounded grossly, one pound; storax pounded, and rose-flowers, half a pound; yellow amber pounded, one pound; common **SALTPETRE** pounded, one pound and a half; **SULPHUR**, a quarter of a pound: mix all the above together, which will produce nine pounds and three quarters of the odoriferous powder.

In all these, the **ACID FUMES** from the *nitre* and *sulphur* form the principal part. The rest appear only useful in holding these in a state of longer suspension.

In 1773, the cathedral of Dijon was so infected by opening a vault containing dead bodies, that it was obliged to be shut up. De Morveau, one of the most able chemists in France, to disinfect this church, employed the following means: He put into a chaffing-dish, covered with fine charcoal, a tubulated retort of green glass, filled with nine ounces of *marine acid**, slightly moistened with half an ounce, or a little more, of water. The fire being lighted, four ounces of the *vitriolic acid*† was poured on the diluted marine acid. The MURIATIC ACID GAS was immediately disengaged, and this, says he, uniting with the *ammoniacal gas* of putrefaction, neutralizes it, prevents its injurious quality, removing at the same time all its loathsome fœtor. In the present instance it was strongly exemplified. It was afterwards tried with equal success in the hospital at Dijon, and since which a decree of the National Assembly has been passed, ordering it to be employed in the different military hospitals where infection prevailed.

In the year 1782 an infectious fever broke out among the prisoners in *Winchester*. This excited the attention of Parliament, and many eminent physicians in London were applied to, to take charge of the prisoners there; but they refused venturing upon so hazardous an office. The late Dr. FOTHERGILL then waited on Dr. SMITH,

* Muriat of Soda.

† Sulphuric acid.

and requested him, in the most urgent manner, to accompany the commissioner to Winchester. He accepted the offer. One hundred and eighty-eight persons had already perished by this dreadful malady, whose violence seemed daily increasing. Most of the officers and servants belonging to the hospital had fallen victims to this fatal distemper. He had previous to this turned his attention to the power of the mineral acids in destroying contagion. He had before noticed, that the *vitriolic* and *marine acids*, in a state of vapour, had proved effectual in destroying contagion; although, owing to its deleterious quality, it could not be employed, except in situations from which people had been removed. But is the NITROUS ACID*, he reasons, in a state of vapour, equally dangerous, and may it not be equally effectual in destroying contagion? To prove that it was not very injurious to life, we put, says he, a mouse, confined in a wire trap, under a glass cylindrical jar, capable of holding about 25 pints, beer measure, or 881 cubic inches; the jar was inverted upon wet sand, contained in a flat earthen trough or pan; it was then filled with the fumes of the smoking nitrous acid, until the animal could not be very distinctly perceived. The mouse was kept in this situation for a quarter of an hour, when the jar was re-

* Dr. Smith uses the term nitrous acid, but probably meant the *nitric*.

moved, and the animal exposed to the open air ; it immediately ran about the wire trap, as usual, and had not the appearance of having suffered the slightest inconvenience from its confinement. After a few minutes, the mouse was again put under the glass jar, which was now filled with the vapour of pure *nitrous acid*, detached from nitre by the vitriolic acid. It remained much about the same time as before, and when the jar was removed, seemed perfectly well.

We repeated the same experiments with a greenfinch, only with some little variation in the manner. We placed, on a table covered with green baize, a brown earthen vessel or pan, containing heated sand ; in this was put a glass faucer, with about half an ounce of strong vitriolic acid ; above which we placed the bird-cage, supported with some small pieces of wood laid across the pan ; then, adding a drachm or two of nitre, in powder, to the vitriolic acid, we covered the whole with the glass jar. The *nitrous acid* rose in such quantity, that, in a very little time, the bird seemed as if in a cloud or fog. We kept it in this situation fifteen minutes, by which time the cloud had disappeared, and the acid was in part condensed on the side of the glass jar ; during the whole time the bird neither panted, nor appeared to suffer any uneasiness, from the atmosphere in which it was confined.

We

We made trial also of the *marine acid*, by adding common salt instead of nitre, to heated vitriolic acid: during this experiment, the bird appeared to be now and then somewhat uneasy, and opened its bill; but, at the end of fifteen minutes, upon removing the jar, it hopped about as lively as before. We then exposed the bird to the *fumes of sulphur*, burnt with an eighth part of nitre; it immediately gave signs of uneasiness, opened its bill, and seemed to pant for breath in such a manner, that we were afraid to cover it with the glass jar. We likewise made trial, in the open air, of the *oxygenated marine acid**; for, as this is so extremely deleterious, we did not think it safe to expose ourselves to the vapour of it in a room, nor did we venture to expose the bird to it in any other way but in the open air, and even there it appeared to suffer very much.

Having made trial of the effect of the different mineral acids, in a state of vapour, upon animals, we determined to render the experiment still more conclusive, by trying what effect they would have on ourselves. With this intention,

* The oxygenated marine acid is a discovery of the famous Scheele, and has been recommended by Berthollet and Chaptal, two French chemists, for the purpose of bleaching. This was the vapour employed by Dr. Morveau to purify the infected cathedral of Dijon.

we filled the room * in which we were with the fumes of *nitrous acid*, (obtained by mixing nitre with heated vitriolic acid, in the manner already described) until the different objects became somewhat obscure, by a kind of fog or mist produced. The fire irons and steel fender lost their polish, and the vapour arising from a bottle of aqua ammoniæ puræ, placed at some distance from the table, was evidently neutralized, as it issued from the bottle by the vapour of the nitrous acid.

Mr. Hume and I remained in the room the whole time, without perceiving the slightest inconvenience; the fumes did not excite coughing, nor affect the eyes, in the way the smoke of wood commonly does, even when I held my head over the glass saucer, and breathed them immediately arising from it. We made trial likewise of the effect of the *marine acid*, which we found more pungent and stimulating than the nitrous; but, though it excited coughing, it did not cause that constriction of the windpipe, and tightness at the chest, with the sense of suffocation, which is immediately induced by the volatile vitriolic or *sulphureous acid*. Indeed we were imprudent enough to try how far we could breathe this last, but I was instantly obliged to run to the window for air, from the sense of constriction and of

* The room in which we made the experiments was a small parlour 13 feet by 10, and 8 feet high; or about 1040 cubic feet.

suffocation which it occasioned. We likewise tried the effect of the mixed fumes of the marine and nitrous acid, a kind of volatile aqua regia, which we found more pungent than the marine acid by itself. As for the oxygenated marine acid, perceiving the effect of it on the bird, and knowing how extremely dangerous it is, we did not venture to go very near it.

From the preceding experiments, the different acid vapours, in respect to the safety with which they may be breathed, may be arranged in the following order:

- 1st. The vapour of nitrous acid, arising from nitre decomposed by vitriolic acid.
2. Ditto—of nitrous acid in its fuming state, or when the nitric acid is mixed with nitrous gas.
3. Ditto—of marine acid, arising from common salt, decomposed by vitriolic acid.
4. Ditto—of nitrous and marine acids, obtained from the decomposition of nitre and common salt by vitriolic acid.
5. Ditto—of sulphur, burnt with an eighth part of nitre.
6. Ditto—of oxygenated marine acid*, obtained by putting manganese to marine acid.

* The oxygenated marine acid is obtained by distilling marine acid from manganese, but may also be procured in small quantity, by putting manganese to heated marine acid, or by gradually adding a mixture of manganese and sea-salt to heated vitriolic acid.

As the first vapour is perfectly harmless, in any quantity in which it may be required, it is evidently the most proper to be employed in all situations where people are necessarily present; and if it should prove efficacious in destroying contagion, of which I have not the smallest doubt, it is the *desideratum* so much sought after by Dr. Lind.

The second, though more pungent than the first, may, I believe, be employed with the greatest safety; at least, I have never observed any inconvenience from using it. But as it cannot so easily be procured in considerable quantity, and is attended with greater inconvenience and expence, I would advise only the first.

Our experiments likewise warrant us to affirm, that the third, or marine acid, though more stimulating, and more apt to excite coughing than the nitrous, may be safely used, at least in a moderate quantity, where people are present; and when nitre cannot be had, I should have no hesitation in employing it.

Of the fourth I can say but little, only that in breathing it I perceived it more pungent than the pure marine acid; and therefore, unless it should be found to possess superior efficacy in destroying contagion, I would not employ it where there are people present.

As the fifth never can be used with safety where there are people present, its use must be
solely

solely confined to fumigating empty apartments, clothes, furniture, &c.

Of the fixth I have no particular knowledge, only that it is extremely deleterious, and I believe extremely powerful; but whether it has more effect on contagion than the other mineral acids, experience only can determine.

Having now fully proved that the nitrous, and possibly also the marine acid, obtained in the manner already described, may be employed with perfect safety, I shall, in the next place, relate how far my experience went to ascertain the efficacy of *nitrous acid* in destroying contagion.

When I arrived at Winchester I found the hospital in this state:

TABLE OF DEATHS.

Date of Weekly Accounts.	Number of Spanish Prisoners.		
	In Custody.	Sick.	Dead.
March 26, 1780	1247	60	1
April - 2, —	1243	106	4
— 9, —	1475	150	10
— 16, —	1457	172	18
— 23, —	1433	142	21
— 30, —	1412	171	21
May - 7, —	1388	191	25
— 14, —	1351	197	27
— 21, —	1523	205	30
— 28, —	1494	226	31
Total			188

Immediately

Immediately upon the admission of the nitrous acid vapour, the deaths sunk down June 17th to 9, on the 27th to 5, July 1st to 5, and July 8th to 1, when the contagion ceased. None after its admission caught it, and the disease immediately shewed a milder aspect.

The efficacy, however, of the nitrous vapour, as appears from almost the whole of the reports since published, is not confined to the destroying or preventing the communication of contagion; its salutary influence is no less remarkable on the sick and on those recovering from sickness; but on this very important subject I could wish the reader to consult Mr. Pateron's Table of the Weekly Returns at Forton Hospital, from which it appears, that during the short space of six weeks, in an hospital containing from 300 to 400 men, there was a difference, from employing the nitrous fumigation, of about 50 lives saved, and about 110 men speedily restored to a state of health fit for active duty; but if the reader is desirous of forming an accurate judgment of the immediate effect of the nitrous vapour on those ill of typhus fever, I would advise him to read with attention what Mr. M'Grigor and Mr. Hill have written on the subject.—By Mr. M'Grigor *
we

* The Effect of the Nitrous Vapour in preventing and destroying Contagion; ascertained from a variety of trials made chiefly by surgeons of his Majesty's navy, in prisons, hospitals, and

we are told, that some years back, during the prevalence of a fever similar to the one he describes, in the same place, the island of Jersey, the 88th regiment to which he belongs, in the space of ten weeks, suffered a loss of 40 or 50 men; whereas during the present illness, when he employed the nitrous fumigation, of 64 men seized with the fever, *he did not lose a single patient*. He further remarks, that by using constantly the nitrous vapour, the malignant symptoms of the disease disappeared, and that from a typhus it became a simple fever without much danger. Dr. CARMICHAEL SMITH himself, on the first day of his arrival at Winchester, was seized with this disorder, and confined to his bed, yet, like a true hero, he would not yield to his disease, but continued to give directions. In a memorial which he afterwards sent to the minister of state, in mentioning these circumstances, he says, “ But these, my
 “ lord, are only the sufferings of an individual.
 “ I readily complied with your lordship’s wishes,
 “ and as to the conditions of my attendance I
 “ made none: convinced that no pecuniary re-
 “ compence could be an adequate compensation
 “ to me, circumstanced as I then was, for the

and on board of ships: with an Introduction respecting the Nature of the Contagion which gives rise to the Jail or Hospital Fever; and the various methods formerly employed to prevent or destroy this. By James Carmichael Smyth, M.D. F.R.S. Fellow of the Royal College of Physicians, and Physician Extraordinary to his Majesty.

“ risk

“ risk I ran ; and that if I was fortunate enough
 “ to survive, and *succeed*, I was certain of the
 “ first of all rewards, the *consciousness* of having
 “ *discharged* a *duty* to which I was *called* by the
 “ *voice* of *my country*, and in the event of which
 “ the *national* as well as my *own honour* was
 “ involved. My endeavours have been attended
 “ with a success which even my friends could
 “ hardly expect, and which I believe stands
 “ *without example* in the annals of physic. I have
 “ already received from the *public* the fullest ap-
 “ probation of my conduct, and make no doubt
 “ that, in consequence of your lordship’s favour-
 “ able representation of it to the *King*, I shall
 “ receive from *his Majesty*, ever attentive to re-
 “ ward merit in the lowest of his subjects, some
 “ mark of his Majesty’s royal favour.” In conse-
 quence of which discovery, he was appointed
 physician extraordinary to the king.

PRACTICAL OBSERVATIONS.

SECT. LIIL

THE SAME SUBJECT CONTINUED.

OF THE VENTILATOR. The good Dr. Hales, in his treatise on this subject, remarks, that when ventilators are proved, as they undoubtedly will one day be found, to be greatly and extensively beneficial to mankind, so as thereby to have a considerable influence on the affairs of the world, it will hereafter be matter of wonder, that so plainly self-evident a benefit should be so many years proposed before the world could be prevailed on to receive them; which proceeds from a general backwardness to all new proposals, not caring to give themselves the trouble thoroughly to consider and examine them. But it is reasonable to believe that ventilators will, from time to time, come into more general use, not only for the several important purposes hereafter to be mentioned, but also for many other at present unthought-of uses to the great benefit of mankind. New discoveries are apt, he adds, to be despised, especially by those who are incompetent judges of them; and that no wonder; for we are slaves to old habits and customs, even to the degree of suffering inconveniencies which we might easily remedy. And this very disposition is sometimes beneficial to us, as it enables us the better to bear inconveniencies which we cannot remedy. But in all other cases, where a remedy can be had, it is renouncing our reason blindly to follow the *old track* we are in, only because it is a *beaten one*, or because we will not give ourselves the trouble to enquire whether we cannot find a *shorter and more commodious way*. One would think it altogether needless to use many arguments to prevail with men to make use of so easy and certain a way to preserve their own lives and that of their comrades. But I am sensible that narrow minds, who do not care to go out of an old beaten, though very bad track, are apt to view new proposals, though ever so rational.

only

only on their worst side, without duly weighing the advantages. This was lately the case of a very useful contrivance for steering the rudder with great ease and safety, by means of a wheel above deck. And I make no doubt, but that whatever discouragement it may meet at first, yet its great benefit in preserving the health and lives of men, will hereafter recommend it to the general esteem and use of mankind: for I cannot think that men will chuse to sicken and die in and by stench in an *old experienced way*, when they have it in their power to prevent it by *new*, rational, and effectual mean.

HALES ON THE VENTILATOR.

THE noxiousness of the putrid air in unventilated jails, may be seen in the following account, which was drawn up by the late Sir John Pringle, viz.

Having lately had an opportunity of seeing several cases of the jail fever, arising from the jail itself, I thought it would not be improper to lay before the public a short account of the manner in which those persons were seized; the chief symptoms and progress of the disease, with some remarks upon it, in order further to illustrate what I have advanced * elsewhere, concerning the danger arising from foul air, and the agreement of this distemper with what has been called the Fever of the Hospital, or more generally, a malignant or pestilential Fever.

In the month of October, 1750, a committee of the Court of Aldermen was appointed to enquire into the best means for procuring in Newgate such a purity of air as might prevent the

* Observations on the diseases of the army.

rise of those infectious distempers which not only had been destructive to the prisoners themselves, but dangerous to others who had any communication with them, and particularly to the courts of justice upon the trial of malefactors, whereof a fatal instance had occurred that year at the sessions held in the Old Bailey.

Jails have often been the cause of malignant fevers, and perhaps no where oftener than in this country. Lord Bacon makes the following observation: *The most pernicious infection next the plague is the smell of the jail, when the prisoners have been long, and close, and nastily kept; whereof we have had, in our time, experience twice or thrice, when both the Judges that sat upon the jail, and numbers of those who attended the business, or were present, sickened upon it and died. Therefore it were good wisdom, that in such cases the jail were aired before they be brought forth.* It is probable, that one of the times pointed at by this noble author, was at the fatal assizes held at Oxford, in the year 1577; of which we have a more particular account in Stowe's Chronicle, in these words: *On the 4th, 5th, and 6th days of July, were the assizes held at Oxon; where was arraigned and condemned Rowland Jenkins, for a seditious tongue; at which time there arose amidst the people such a damp, that almost all were smothered. Very few escaped that were not taken.—Here died in Oxon three hundred persons;*

persons ; and sickened there, but died in other places, two hundred and odd.*

Of the same kind of infection we have an unhappy instance so fresh in our memory, that I need not have mentioned it here, had it not been to inform such as live at a distance, or those that are to come after us. In the year 1750, on the 11th day of May the sessions began at the Old-Bailey, and continued for some days ; in which time a great number of criminals were tried, and there was present in the court a greater multitude than usually attend. The hall in the Old-Bailey is a room of no more than about 30 foot square. Now, whether the air was at first tainted from the bar by some of the prisoners, then ill of the jail-distemper, or by the general uncleanness of such persons, is uncertain ; since, from the latter cause, it will be easy to account for its corruption ; especially as it was so much vitiated by the foul steams of the Bail-dock, and of the two rooms opening into the court in which the prisoners were the whole day crowded together, till they were brought out to be tried : and, it appeared afterwards, that these places had not been cleaned for some years. The poisonous quality of the air was still aggravated by the heat and closeness of the court, and by the perspirable matter of a great number of all sorts of people penned up for most

* This account is confirmed by Cambden, *vid. Annal. Eliz.*

part of the day without breathing the free air, or receiving any refreshment. The bench consisted of six persons*, whereof four died, together with two or three of the counsel, one of the under-sheriffs, several of the Middlesex jury, and others present, to the amount of above forty in the whole, without making allowance for those of a lower rank, whose death may not have been

* *Viz.* The Lord Mayor, one of the Lords Chief Justices, two of the Judges, one of the Aldermen, and the Recorder. Of these died Sir Samuel Pennant, Lord Mayor; Sir Thomas Abney and Baron Clarke, Judges; and Sir Daniel Lambert, Alderman. It is remarkable, that the Lord Chief Justice and the Recorder, who sat on the Lord Mayor's right hand, escaped, whilst he himself, with the rest of the bench on his left, were seized with the infection: and that the Middlesex jury, on the same side of the court, lost so many, whilst the London jury, opposite to them, received no harm; and that of the whole multitude, but one or two, or at most a small number of those that were on the side of the court to the Mayor's right hand, were taken ill. Some, unacquainted with the dangerous nature of putrid *effluvia*, have ascribed both this circumstance, and the sickness in general, to a cold taken by opening a window, by which a stream of air was directed to the side of the court on the Lord Mayor's left hand: but it is to be observed, that the window was at the farthest end of the room from the bench, though the judges suffered most. Neither could the kind of the fever, or the mortality attending it, be imputed to any such cause. It is therefore probable, that the fresh air directed the putrid steams to that part of the court above-mentioned. This, indeed, must be granted, that all septic particles passing into the blood, become more active and fatal if the infected person catches cold, or by any accident suffers a stoppage of perspiration; for a free perspiration is the chief means by which the blood is freed from any morbid matter of that kind.

heard

heard of, or including any that did not sicken within a fortnight after the sessions.

The Rev. Dr. Hales and I being consulted by the committee upon the point referred to them, and having visited the jail in company with those gentlemen, it was then agreed that, considering the smallness of the place, in proportion to the number of the prisoners, it would be proper to make a farther trial of the ventilator, and to have it worked by a machine in the manner of a windmill, to be erected for that purpose upon the leads of Newgate.

The scheme was laid before the Court of Aldermen and approved of, but not put in execution till near two years after. For on the 11th of July, 1752, Dr. Hales acquainted Dr. Knight and me, that several of the tubes were finished, and that the machine had been going about six weeks; wherefore being desirous to see the effects, he had appointed Mr. Stibbs, the carpenter employed in that work, to meet him at Newgate, and desired us to go along with him.—We went accordingly, and having visited several of the wards, we were all of us very sensible that such as were provided with ventilating tubes were much less offensive than the rest that wanted them; and Dr. Hales and I could perceive a considerable improvement made upon the air of the whole jail since the time we had been first there with the Committee. Some of the wards were

so free from any smell peculiar to such places, that I am persuaded, were Dr. Hales's design completed, and a person appointed to regulate the sliders of the tubes, and to keep the machine in order, the usual bad consequences from foul and crowded jails, might in a great measure, if not wholly, be prevented in that place.

One of the wards allotted for the women had a small room adjoining to it, in which they usually slept. Both places seemed at that time well aired, though the latter was close, and, if I mistake not, without either window or chimney. The prisoners informed us that before this ward received the tubes, this sleeping place had been very offensive, but that soon after it became sweet; and though upon the first working of the ventilator they had been more sickly than before, they soon recovered their health, and had preserved it ever since. Now from this account we must not infer that any danger will arise from a sudden change of bad air for good, since this accident may be better accounted for from another circumstance we were then likewise told of, viz. that this ward of the women had been supplied by a ventilating tube before those in the lower story, where the air being in a more corrupted state, it had passed from thence through the seams of the floor and other passages, to replace that which was drawn off by the tube in the ward above: but that after the bad air was exhausted,

exhausted, the benefit of the fresh air soon appeared by the better health of the prisoners.

But as it was not my design in this paper to set forth all the advantages that may be expected from the ventilator, I shall leave that subject to be treated of by the inventor of it, and shall only take notice, that the tubes from the several wards, uniting in one great trunk, convey all the putrid steams by that channel into the atmosphere, through a vent made in the leads of Newgate.— Though the wind was moderate during the time we staid, yet we observed that the ventilator threw out a considerable stream of air of a most offensive smell.

Before we parted, Mr. Stibbs informed us, that Clayton Hand, one of his journeymen, whilst he was employed in setting up the tubes, was seized with a fever, and carried to St. Thomas's Hospital, after lying some days ill at his own house; whereupon apprehending that this man's sickness might be owing to the air of the jail, and Dr. Knight and I having the curiosity a few days after to go to St. Thomas's to make the enquiry, we found the patient sitting in one of the courts, recovered of his fever, though still weak, and had the following account from himself.

He said, that upon first finding himself indisposed, he had left off work for some days, but upon growing better he had returned to Newgate. That soon after happening to open one of the tubes

tubes of the old ventilator, which had stood there for three or four years, such an offensive smell issued from it, that being immediately seized with a *nausea* and sickness at his stomach, he was obliged to go home, and that the night after he fell into a fever, in which he lay about eight days before his friends carried him to the hospital. That becoming soon delirious, he recollected no other symptom succeeding those mentioned, besides frequent *reachings* to vomit, a trembling of his hands, and a constant pain in his head. This man had taken no medicine before he came into St. Thomas's, and since that time was attended by Dr. Reeves; but as that gentleman was not then present, we were informed by the apothecary, that Clayton Hand had been admitted in the advanced state of a continued fever, attended with a great *stupor* and a sunk pulse, and that the fever had not left him till several days after his admission.—The nurses account was, that he had all along lain like one stupified, and that after the fever went off, he had continued for some time very dull of hearing. We could learn nothing certain about the duration of the fever; but from what the patient and his attendants told us, we recollected that he must have been ill about three weeks. So that from all these marks we made little doubt but this person had been ill of the jail distemper, and were confirmed in our opinion by the following circumstance.

In

In company with the convalescent was one Thomas Wilmot, another of Mr. Stibbs's journeymen, who had likewise worked in Newgate, and whom we remembered a few days before to have seen in that place, very active and in perfect health. This man told us he had come to see his companion, but as he apprehended himself in danger of falling into the same fever, he should therefore be glad of our advice. Upon examination we found his tongue white, his pulse quick, and that he complained of a pain and confusion of his head, with a shaking of his hands, and a weakness of his limbs. He said his disorder had come on gradually since the time we saw him in Newgate, but that he was then so very ill, he could work no longer. From which account it appeared to us, that this man had also caught the infection, but as the fever seemed not to be quite formed, we had hopes of stopping its progress: and with this view we advised him to take a vomit, and on the following night a sudorific. He followed the prescription, and the effects shall afterwards be mentioned.

After Wilmot had told us his own case, he informed us of the indisposition of three more of his companions, who had all been employed by Mr. Stibbs in Newgate: whereupon we took their directions, visited them, and found them all ill of the jail distemper.

The

The first was Michael Sewel, who lodged in the Swan-Yard, near Newgate. This man had been ten days confined to his bed without taking any medicine. He was then delirious, and had the petechial eruption. But observing that he lay in a close, ill-aired, and dirty room, without any attendants but his wife, then suckling a child, we believed he had no chance to recover where he was, and therefore recommended his case to Mr. Stibbs, who procured his admission that day into St. Thomas's Hospital, where he also recovered.

The second was Adam Chaddocks, who lay at a green shop in the Little Old Bailey. He was taken ill on the same day with the former, and had used no medicine. He had likewise the petechial spots upon his breast and back, and though he was not altogether insensible, was affected with a *stupor*, attended with a sunk pulse, and other symptoms of the distemper. His landlady, who took care of him, informed us he had been troubled with *reachings* to vomit, and a head-ach from the beginning, and that for some days past he had been seized with a looseness, and that his stools were very offensive. As the room this person lay in was large and well aired, we did not think it necessary to remove him, but recommended him to the care of Dr. Pate, physician of St. Bartholomew's Hospital, who attended him till he recovered.

The

The third was John Dobie, apprentice to Mr. Stibbs, and about 15 years old, who lived with his parents in a court by the White Bear, in Cannon-street. We saw him on the same day with the other two, which was the 14th of his sickness, and the 12th since he took to his bed. His mother told us that some of the journeymen working in Newgate, had forced him to go down into the great trunk of the ventilator, in order to bring up a wig one of them had thrown into it; and that as the machine was then working, he had almost died of the stink before they could get him up. That upon coming home he complained of a violent head-ach, a great disorder at his stomach, with reachings to vomit, which had never entirely left him. We found him extremely low, with a sunk pulse, a delirium, and an unusual anxiety or oppression about his breast. This last symptom we ascribe to the opiates he was then taking for a looseness that had come on two or three days before we saw him. This lad being in no condition to be moved, and being besides well attended by his mother, and in a well aired chamber, we prescribed to him there, and repeated our visits till he was quite free of the fever. It was observable, that before he was taken ill he had been twice let down into the great trunk of the ventilator, when the machine was standing still, without complaining of any ill smell, or receiving any hurt thereby, but that the

the last time, when the machine was working, he immediately cried out he was ready to be suffocated, and the two men who helped him out, by receiving the foul steam from the trunk, were both set a vomiting so violently as to bring up blood.

On the 23d of August, Thomas Wilmot above-mentioned, called upon Dr. Knight, and told him, that after taking the vomit and sweats, he had immediately recovered, but begged him to see his wife, who then lay ill of a fever at his house in Snow's Fields, Southwark. The Doctor suspecting that this woman's indisposition might be owing to the contagion received from her husband, acquainted me with it, and carried me to see her. There we were informed that Wilmot's daughter, a girl of eight years old, who lay with her parents, had been seized with a fever soon after her father's recovery; that she had been ill about a fortnight, and they believed had spots upon her breast, but that she had recovered without any medicine. That her mother had not only nursed her, but continued to lie with her, and that some time after the girl's recovery, the mother began to complain, and soon after fell into a fever, and that it was the 12th day since she was confined to her bed. This woman having the *petechiæ*, a stupor with deafness, and a sunk pulse, there was no doubt of her being likewise infected with the distemper, and probably by her daughter.

As

As she had been without any assistance, we advised her husband to send for Mr. Breach, apothecary in the Borough, who having served in the hospital of the army during the war, was well acquainted with the nature of such fevers; and having left directions with him, we did not return till after the crisis, which happened upon the 16th or 17th day from the time she was confined to her bed.

Some time after this Mr. Breach, the apothecary, informed us, that he was again employed in Thomas Wilmot's family; for that Elizabeth Marshall, his sister-in-law, after nursing his wife, was taken ill of the same kind of fever, and desired our assistance. This person we found in the same bed, and in the same condition in which we had seen her sister some time before; and in the room with her, in another bed, a son of Wilmot's, a boy of nine years old, ill of the same distemper. The former had been attacked on the 15th of September, and the latter the day before. The woman's fever ran out the ordinary length of sixteen or seventeen days, but the boy's came some days sooner to a crisis, and was all along of a milder nature. She recovered very slowly, complaining of great weakness, deafness, and a confusion in her head, the ordinary consequences of these malignant fevers.

In my return I called at St. Thomas's Hospital, to enquire for one William Thompson, a lad of
about

about sixteen years of age, who, as Wilmot then told me, was another of Mr. Stibbs's journeymen, and had been taken ill by working in Newgate, since the three he had mentioned to me before. This lad was recovered, but not yet dismissed. He said, that upon finding himself growing ill he had left his work, and kept at home for about a week, complaining of a pain in the hinder part of his head, and in his back, of a trembling of his hands, and of restless nights; that his feverish indisposition increasing, he had been obliged to take to his bed, where he lay about eight days before he was sent to the hospital. The apothecary added, that he had continued about the same number of days before the turn of his fever; that his pulse had been extremely low all that time, and that they believed him to be in the utmost danger. He added, that the wife of Michael Sewel (the second patient they had received of those that had been employed in Newgate), some days after her husband's admission, came to seek advice for herself, and that her complaints had been the same with Wilmot's, at the time we saw him; he added, that he had given her some medicines, but had heard nothing of her since.

On the last day of December, Mr. Breach informed me, that about a month ago, he had been called to attend Thomas Wilmot, but as he died before he saw him, he could give no other account

count of his sickness, than as they told him he had long been in a bad state of health, and that at last he became feverish, and went off with a looseness.

In the beginning of this month, the widow applied to Dr. Hales and me, in order to have the sufferings of her family attested and laid before the Lord Mayor, in hopes of having some provision made for them. Upon which occasion we learned, that Thomas Wilmot, her husband, after taking the sudorific, so far recovered as to work at his business, but that though he did not return to Newgate, yet his strength would not permit him to continue at work above a day or two at a time, still complaining of a head-ach and pains across his breast, or, as he expressed it, about his heart; of a feebleness of his limbs, a shaking of his hands, and a constant drought. That notwithstanding these ailments, he went out daily till a week before he died, when he grew very weak and more feverish, had sometimes profuse sweats, and at other times a looseness, and that both these excretions, and also his breath, were remarkably offensive. That at last he was seized with convulsions, and died in one of them. His wife added, that her youngest son James, a boy of four years of age, was after the father's decease seized with a spotted fever, of the same kind with what had prevailed in the family, but that he recovered; and that her own mother, Eleanor Meggit,

Meggit, who did not live in the house, but came often to see them, was also taken ill of a fever without spots, and died about ten days after her husband. She concluded with telling us, that the distress of her family had been increased by their being deprived of all assistance from their neighbours, who having thus seen the whole family, one after another, seized with this fever, were as much afraid to come near them, as if they had been infected with the plague.

It will be proper to add, that besides these six persons that were taken ill by working in Newgate, and whom I saw, there was another, as Mr. Stibbs has lately informed me, but whom I never visited. So that, besides Wilmot's whole family, and Sewel's Wife, who received the contagion at second-hand, there were seven persons originally seized with the fever out of eleven only that were employed in the jail by Mr. Stibbs. Now as most of these seven were taken ill within a few days of one another, and of the same kind of distemper, it is not to be doubted but that it was owing to the *foul air* of Newgate.

From all which it appears how requisite it is that the public should take such measures as may prevent the like accidents arising from foul and crowded jails, or indeed from any place, wherein a multitude of people are long, closely, and nastily kept; and which can never be obtained without a constant change of air.

Nor

Nor are distempers of this sort to be accounted among such rare occurrences as require no particular provision to be made against them, since from this very instance it is manifest how often disasters of this kind may happen without any notice being taken of them. Had it not been for the accident of Sir John Pringle's going at that time to Newgate, hearing of the first man's illness, and seeing his companion with him, all these men might have been ill, and not only the public, but most of themselves ignorant of the cause. And as for Wilmot's family, they might have received the infection, and even have perished by it, without any person being convinced of the danger arising from jails, or the contagious and malignant nature of the fever, excepting a few in the neighbourhood, which is a remote and obscure quarter of the city.

The first trial of ventilators in an hospital, was made in the county hospital at Winchester; where they are fixed under the floor, at the farther end of the ward from the entrance, yet so as to be worked with great ease by those in the ward, by means of a lever F, G, vide *Fig. 2.* fixed across the ward between the beds. The midribs of the ventilators are each seven feet long, and three feet wide. The ventilators are not separate, as in *Fig. 2.* but have only one common partition of thick plank. The air is drawn out of the ward through a large trunk, which reaches

reaches near up to the ceiling, that it may not incommode the patients with the velocity with which it rushes into the trunk ; which velocity is so great as to twirl fast round a little wind-mill placed at the mouth of the trunk. And in cases where such a wind-mill cannot be seen by the workers of the ventilators, then the wind-mill may be made to make a very small tinkling bell to sound, as was done at Newgate, when the first ventilators were worked by hand, and as is done in Durham county jail, with a very small bell. The like twirling wind-mill is found to be of considerable use in diverting, and thereby encouraging those who work the ventilators to persist in working ; without which sensible amusement they are apt to be discouraged from working the ventilators ; because, as it has been found by experience, they are apt to look upon it as working to no purpose, since they can see no visible effect that it has on the invisible air.

This ward being filled with the fumes of burning pitch, they were drawn off, and dispelled by the ventilators, through trunks which conveyed them out into the open air, in nine minutes, notwithstanding the length of the ward is fifty-eight feet, and its whole capacity equal to 278 tuns. When the farther door was shut of another long ward, which communicated with this by a long passage, on working the ventilators, the smoke was drawn down the chimney of that ward ; and
with

with ten minutes ventilation the ward was sensibly sweeter.

There are ventilators also in St. George's Hospital, near Hyde-Park-Corner, whose midribs are each nine feet long, and four and a half feet wide. They are fixed on the top of the house, and are worked by a windmill. From the ventilators there goes a trunk, a foot square in the clear, to the three large wards on the western side of the hospital, which are over each other, and extend north and south. From the above-mentioned perpendicular trunk, there is near the ceiling of each ward a like trunk, which reaches from near the door of the ward to the farther end of it, *viz.* about seventy-five feet; where the foul air being drawn into the trunk, the succeeding fresh air enters at the ward-door, and thereby drives out the foul air before it; and the like trunks are fixed in the wards on the eastern side of the hospital. But the fresh air must by no means enter at the windows in cold weather, because such cool air will fall precipitately down through the warmer air of the ward, and thereby greatly incommode the patients; whereas, by entering principally at the lower part of the open door-case, that inconvenience will be avoided: or holes might be made through the wall for the air to enter the wards from the stair-case; by which means the foul air at that end of the ward will be drawn to the other end of the ward,

and thence be drawn off by the ventilators. The doors should be always open while the ventilators are working. There are also air-trunks to several lesser wards.

As several of these wards may thus be ventilated at the same time, and as the change of air will therefore be so very gentle as to be in a manner insensible; therefore the ventilation may be continued much the longer with great safety to the patients.

Some are apt to think ventilators useless in hospitals, because they can in good warm weather air the wards by opening the windows, and that doubtless much better than by ventilation; and were there such good kindly weather all the year round, then ventilators would be useless. But since, for the greatest part of the year, the external air is too cold to be admitted in at windows, because it is a well-known truth, *viz.* that cold air admitted into the upper part of a warm room, being specifically heavier, falls precipitately down through the warmer air. And this it must doubtless do in the warm wards of an hospital, so as to incommode and endanger the welfare of the patients; besides that, the indraft of air at open windows will be much greater than what comes in by the more gentle method of ventilation; besides this further great advantage, that the fresh air drawn in by ventilators, principally enters the wards at the lower half of open

open door-cases, as is plain to be seen by holding a lighted candle at the lower and upper parts of an open door-case; or else the fresh air may be conveyed into some wards, by trunks placed near the floor, as is done with good effect in 32 chambers in the Small-Pox Hospital at Sir John Oldcastle's. It has been said, that some hospitals stand in so open and airy a situation, that they have no occasion for ventilators; yet it is well known, that notwithstanding ships at sea are in so airy a situation, that millions of people have lost their lives there by the foulness and putridness of the air in ships; which inconvenience is effectually prevented by ventilators, as is now fully proved by repeated experience in many ships, which the people on board are so sensible of, that they work the ventilators with eagerness.

In the year 1752, a pair of double ventilators were put into an hospital for the small-pox at Sir John Oldcastle's, near London. Their midribs were seven feet long; and three feet wide. The house was four stories high, with galleries on every floor, on each side of which were four chambers, with vacant spaces in the middle, in which there was a chimney. In the middle of one of these galleries the ventilators were fixed up to the ceiling, where the lever was commodiously worked up and down by means of long iron rods fixed to it at F and G, *Fig. 2**, the lower ends of which

* Vide Hales on the Ventilator.

rods were fixed to short levers, one end of which worked on iron pins fixed in the sides of the vacant space where the chimney was. By means of trunks branching from the larger perpendicular ones, all the thirty-two chambers were ventilated in their turns, *viz.* the eight rooms of a gallery at a time, by having the foul air drawn with a cautious hand through a hole four inches square, near the ceiling of each room, in which were two patients, the fresh air entering through a long trunk under the bed on the other side of the room; which trunk is full of small holes, especially at its farther end, thereby not only to prevent the inconvenience of a large stream of air in one place, but also to convey some of the fresh air to the farther side of the room, and by that means impel all the foul air so as to have it drawn out. The foul air is conveyed by a trunk through the roof of the house, where the upper part of the trunk is turned horizontally, to prevent the entrance of rain. In case it may not be proper to ventilate any particular wards, there is a valve to prevent the drawing out of any air. The midribs were seven feet long, and three wide. This kind of ventilator is no annoyance to the neighbourhood.

Such ventilation causes the hospital to be in a manner as sweet as a private house. And it was observed, *that fewer by more than one third die,* since the drawing the foul putrid air out of the chambers

chambers by ventilation ; and it is reasonable to think, that the danger of so putrid a distemper as the small-pox is, will be much greater in a foul putrid than in a purer air. The good effect of this method most probably led to the not keeping the chambers of the sick very close in private houses.

By order of the Right Honourable Henry Fox, Esq. secretary at war, ventilators were fixed under a guard-bed in the Savoy, whose midribs were eight feet long, and five feet broad ; with these five rooms are ventilated ; three always, and sometimes four at a time. The air-pipes draw air from under the guard-beds ; grate-work-passages being made through the fore-front of the beds, at an oblique distant position from the mouth of the pipes, thereby to prevent the indraft of any thing the soldiers may out of diversion put there. And, for the same reason, one of the air-pipes which goes down through the boards of the floor to a room below, does not go directly through the ceiling, which is opened at about two yards distance from the air-pipe.

Mr. Hayward, Master of the Savoy Prison, has always been very careful to have the wards scraped and swept every morning ; for he observes that the dirt of the shoes much increases the stench and foulness of the air. Yet, notwithstanding this his care to keep the rooms clean,

clean, when there were many prisoners, they were apt, says Hales, to be sickly, and to get the jail distemper, for want of changing the foul, stagnant, putrid air. The doing of which, by means of ventilators, has made those wards so healthy, that in the year 1749, of 200 men but one died, and he of the small-pox. And in the year 1750, of 240 which were there three months, but two died. In the year 1751 none died: and in the year 1752 only one old person died. Whereas before the ventilators were put up, there often died 50 or 100 of the infectious jail distemper. And this, notwithstanding they have a paved open court to walk in, which was washed thrice a week in the evening, and the wards as often in the morning in warm weather, and every 14 or 20 days in cold damp weather. But before ventilation, the foul air of the wards, which became putrid by long continuance, being not frequently changed for fresh air, was infectious and deadly. This probably occasioned the jail distemper there in the year 1757; one of the large wards having no ventilation, whence the infection might arise. And what contributes the more to the present healthiness of the place, is, that

Mr. Hayward, the master of the prison, continues with the same care and zeal to keep it clean. And, the more effectually to cure the wards of any infection, he burns, as I desired him, every
fix

six weeks, two pounds of *brimstone* in the larger wards, and a pound in the smaller wards.

And Mr. Akerman, the keeper, informed me, that the wards in Newgate are cleaned every week ; a laudable example that ought to be practised in jails ; but one of the wards having no ventilators, and the place being crowded with men, the jail distemper was bred in the very hot summer of the year 1757, which was prevented from spreading, by removing the sick, and purifying the wards with the fumes of burning *brimstone* and *vinegar**.

Ventilators were fixed in Newgate by order of Sir Richard Hoare, when Lord-Mayor, which ventilated five principal wards where the women were. It was observable that in consequence the prisoners were more healthy, and considerably fewer of them died, for a year after those wards were ventilated, although those apartments contained often a great number of prisoners. And the greatest part of those who died arose from sickly prisoners brought from other jails to Newgate to attend the sessions.

As ventilators were first fixed in Winchester Hospital, so were they first used in that jail, which were found to be of great benefit to the prisoners, in freeing them from the intolerable stench of a foul, close, putrid air, by often drawing it off, and introducing fresh air. They are fixed upon the

* This account from Hales was published in 1758.

ceiling of the debtors room, as well that they may be out of the reach of the prisoners to damage them, as also that they may take up none of their room; where they are worked by the lever F, G, which is placed near a wall, thereby ventilating both the debtors room and the criminals dungeon, or night-room—the prisoners enjoyed good health for more than two years after they were fixed there, *viz*, till two fellows from Reading jail, who had the jail distemper, first gave it to a man who shaved them; and some time after eight more were seized with it, who were all in the same day-room, in which the felons had been till they were executed; and no more than those eight were ill of that distemper for a long time after; an evident proof that the felons brought the distemper there, and that ventilation arrested its progress. The jail distemper is of so infectious and pestilential a nature, that it is well known, by many instances, to have been carried into towns refreshed with the open air; and may well, therefore, infect easier in close prisons, notwithstanding the wards are ventilated to such a degree as very sensibly to refresh them. And it is very probable that the like degree of ventilation would effectually prevent, if not arrest, the breeding of jail distempers, which are chiefly occasioned by a high degree of putrefaction of foul, long confined, and stagnant air. Thus silk-worms are destroyed by their own stench.

It were therefore to be wished, that the prisoners which are removed from unventilated jails, to those which have ventilators, were carefully kept in separate wards, till ventilators are put into all jails. For though ventilation may effectually prevent the first breeding of the jail distemper, yet it will not absolutely cure it, nor prevent its spreading infection. Which shews how reasonable it is to have all jails thus ventilated, thereby to prevent the breeding of that pestilential infectious disease, called the Jail Distemper.

Many are apt to think that there is no occasion for ventilators in those prisons which have an open area or court for the prisoners to air themselves in. But this is a great mistake; for there are many instances of the Jail Distemper's being bred, and destroying many in jails with open courts. This was frequently the case in the Savoy, before ventilators were fixed there to change the foul putrid air of the wards. And in the Fleet prison an hundred died of that distemper in the winter, between the years 1753 and 1754, notwithstanding there is a large area. And it is notorious, that millions of mankind have been destroyed by the noxious putrid air in ships, and this notwithstanding they have the advantage of plenty of very pure air to breathe in whenever they come upon the open deck. These daily instances fully prove the great importance of refreshing the foul air in prisons, ships, &c.

PRACTICAL OBSERVATIONS.

SECT. LIV.

THE SAME SUBJECT CONTINUED.

GOD in his infinite goodness was pleased to exert superior power in creating man a superior being; a being endued with a choice of good and evil; and capable, in some measure, of co-operating with his own intentions. Man, therefore, may be considered as a limited creature, endued with powers imitative of those residing in the Deity. He is thrown into a world that stands in need of his help; and has been granted a power of producing good out of evil. If, therefore, we consider the earth as allotted for our habitation, we shall find that much has been given us to enjoy, and much to *amend*; that we have ample reasons for our gratitude, and still more for our *industry*. In those great outlines of nature to which art cannot reach, and where our greatest efforts must have been ineffectual, God himself has finished these with amazing grandeur and beauty. Our beneficent Father has considered these parts of nature as peculiarly his own; as parts which no creature could have skill,

or strength, or power, to amend : and therefore made them incapable of alteration, or of more perfect regularity. The heavens, and the firmament, shew the wisdom and the glory of the Divine Artificer. Astronomers, who are best skilled in the symmetry of systems, can find nothing there that they can alter for the better. God made these perfect, because no subordinate being could correct their defects.

When, therefore, we survey nature on this side, nothing can be more splendid, more correct, or amazing. We there behold a Deity residing in the midst of an universe, infinitely extended every way, animating all, and cheering the vacuity with his presence ! We behold an immense and shapeless mass of matter, formed into worlds by his power, and dispersed at intervals, to which even the imagination cannot travel ! In this great theatre of his glory, a thousand suns, like our own, animate their respective systems, appearing and vanishing at divine command. We behold our own bright luminary, fixed in the centre of a system, wheeling its planets in times proportioned to their distances, and at once dispensing light, heat, and action. The earth also is seen with its twofold motion ; producing, by the one, the change of seasons ; and, by the other, the grateful vicissitudes of day and night. With what silent magnificence is all this performed ! with what seeming ease ! • The works of art are exerted

exerted with interrupted force ; and their noisy progress discovers the obstructions they receive : but the earth, with a silent steady rotation, successively presents every part of its bosom to the sun ; at once imbibing nourishment and light from that parent of vegetation and fertility.

But not only provisions of heat and light are thus supplied, but its whole surface is covered with a transparent atmosphere, that turns with its motion, and guards it from external injury. The rays of the sun are thus broken into a genial warmth ; and, while the surface is assisted, a gentle heat is produced in the bowels of the earth, which contributes to cover it with verdure. Waters also are supplied in healthful abundance, to support life, and assist vegetation. Mountains arise to diversify the prospect, and give a current to the stream. Seas extend from one continent to the other, replenished with animals that may be turned to human support ; and also serving to enrich the earth with a sufficiency of vapour. Breezes fly along the surface of the fields to promote health and vegetation. The coolness of the evening invites to rest ; and the freshness of the morning renews for labour.

Such are the delights of the habitation that has been assigned to man ; without any one of these, he must have been wretched ; and none of these could his own industry have supplied. But while many of his wants are thus kindly furnished, on
the

the one hand, there are numberless *difficulties* to excite his industry on the other hand. This habitation, though provided with all the conveniences of air, pasturage, and water, is but a desert place without human cultivation. The lowest animal finds more conveniences in the wilds of nature than he who boasts himself their lord. The whirlwind, the inundation, and all the asperities of the air, are peculiarly terrible to man, who knows their consequences, and, at a distance, dreads their approach. The earth itself, where human art has not pervaded, puts on a frightful gloomy appearance. The forests are dark and tangled; the meadows over-grown with rank weeds; and the brooks stray without a determined channel. Nature, that has been kind to every lower order of beings, has been quite neglectful with regard to him; to the savage uncontriving man the earth is an abode of desolation, where his shelter is insufficient, and his food precarious.

A world thus furnished with advantages on one side, and *inconveniencies* on the other, is the proper abode of *reason*, is the fittest to exercise the industry of a free and thinking creature. These evils, which art can remedy, and prescience guard against, are a proper call for the exertion of his faculties; and they tend still more to assimilate him to his Creator. God beholds, with pleasure,

pleasure, that being which he has made; converting the wretchedness of his natural situation into a theatre of triumph; bringing all the headlong tribes of nature into subjection to his will; and producing that order and uniformity upon earth, of which his own heavenly fabric is so bright an example.

In Linnæus you read an hypothesis (1 Amænitat. Academic.) on the cause of intermittent fevers, and you will find a collection of facts to prove their connection with argillaceous earth, or clayey soil. Of this, he was so well satisfied, that he concluded that attenuated particles of clay, taken into the body with food and drink, entered the blood, stuck in the extreme branches of the arteries, and brought on, as a true proximate cause, the symptoms of the disease. (Hypothesis nova, § v.) The sensible inquirer will find, in his fourth section, an enumeration of all the parts of Sweden famous for intermittents and strata of argillaceous soil; and the authority of Mr. Sandel, quoted as an eye-witness of the same coincidence of clayey bottoms and intermittent fevers in Pennsylvania. The facts I take to be indubitable. But the hypothesis I would dispute. I conceive that the true cause is the putrid miasms of half-corrupted vegetable subjects, as we before attempted to prove, and by this may be satisfactorily explained the following fact:

The

The soil, says Donaldson (in his *General View*, &c. p. 12.) of the Carse of Gowrie, in the county of Perth, in Scotland, consists chiefly of rich clay, loam, and sharp gravel; and the inhabitants, until the year 1735, used to be subject to the ague. Then one or two of the principal proprietors undertook, by draining, summer-fallowing, and sowing grass-seeds, to improve their estates. Accident led them to a discovery of the efficacy of lime on that soil, from observing the powerful effects of some old lime rubbish of decayed buildings, when spread on the corner of a field. The liming their lands then gradually came into use, and has since been generally adopted; the consequence of which is, the Ague has long ago disappeared. Here seems to have been a beautiful experiment made upon about ninety-six square miles of country, where the putrid steams that formerly gave the people agues, are now attracted by the lime and turned to calcareous nitre, while increased productiveness of the land, and greater wholesomeness of the air, continue to be the happy consequences. Some judgment may hence be formed concerning the power of art in changing the face of nature! What a grand reflection!

Lime, we know, is the grand agent of destruction, and being strewed on the earth, produces a hasty decomposition of vegetable matter. It is not in itself a manure, for nothing grows in
pure.

pure calcareous earth ; but it becomes the digester and preparer of the vegetable food, and hence it is esteemed the best manure.

GOD, with consummate wisdom, has made reciprocal wants. He has formed the barren hill and the fenny marsh, and by the exertion of man, the manure of the valley is transported to the hill, the waters assume their bed, and the chalk of the mountain is carried down to the valley. It is the earth, says Pliny, that like a kind mother, receives us at our birth, and sustains us when born. It is this alone, of all the elements around us, that is rarely found an enemy to man. The body of waters deluge him with rains, oppress him with hail, and drown him with inundations. The air rushes in storms, prepares the tempest, or lights up the volcano ; but the earth, gentle and indulgent, ever subservient to the wants of man, spreads his walks with flowers, and his table with plenty ; returns with interest every good committed to her care ; and, though she produces the *poison*, she still supplies the *antidote* ; though constantly teized more to furnish the luxuries of man than his necessities, yet, even to the last, she continues her kind indulgence, and, when life is over, she piously covers his *remains*, in her bosom.

PRACTICAL OBSERVATIONS.

SECT. LV.

OF THE STAGES OF PUTRID FEVER.

As putrid fever is said by Sydenham, and other equally good authorities, to be a disease that cuts off a tenth-part of mankind, the reader will therefore pardon me, if I fix his attention in a particular manner upon so interesting a subject, more especially as at this time we are engaged in a war, not less destructive by the wicked contrivances of mankind to inflict the most horrible sufferings, such as tongue cannot express, nor the imagination raise any picture of, on beings of the same flesh and blood as ourselves, and professing the Christian religion, which teaches that all are brothers; I say, not less destructive by the contrivances for murder, than for the generation and spreading of pestilential disorders. The destruction of our troops in the West Indies has been so great by the contagion of fever, that most thought themselves self-devoted, when they accepted any command in those quarters; nor has the loss been trifling on the continent from the same cause.

When any one is seized with putrid fever, the first thing that should occupy our attention is, whether its course can be arrested? Sir John Pringle divides this fever into three stages, or periods; when it first attacks; the intermediate time; and the last stage.

In the first stage, he says, the crassamentum of the blood looks more florid than usual; in the second, it is broken and incoherent, and of a more purple hue; and, after that period, is still less tenacious, more like ichor, and often extremely dark and offensive, even when fresh drawn. We shall, however, only divide this fever into two stages. It is the confounding these that has produced such contradictory evidence, and with a poison so active, it is not to be wondered if the right practice has been often wrong timed. The mischiefs occasioned by this have been so great, that we are conscious to have a very powerful and general prejudice to overcome: for till of late the laws of the animal œconomy were little attended to, and *specific remedies* * were the order

* How often do we hear, even at the present day, practitioners apologize to their patients, "We have tried *every thing*." "I am sure, madam, you gave each drug a *fair trial*." "Yes, sir," is the answer, "my frame has been an apothecary's shop indeed, and it is *wonderful* I am no better." The true wonder is, that the patient should be *alive* to make any complaint. Every one has heard of the doctor, who observing a Welchman, just recovered from a fever, as the call of nature, long for a red herring and ale, ordered it him, and he recovered;

order of the day. Hence bleeding and tonics, with opium, in putrid fever, have saved a few only, and killed thousands.

covered; he gave it to another who was really in a fever, and he died. He noted it in his book—a red herring and ale is good for a Welchman in fever, but kills an Englishman! The same kind of empiricism has been too long practised in putrid fever with respect to bleeding, evacuates, &c.; and the practitioner was astonished to find his want of success, not seeing that the circumstances differed. This destructive *empiricism* is very well described by Mons. Peron, in the following Epigram:

Dans un bon corps, *Nature* et *Maladie*
 Etoient aux mains. Une aveugle vient là,
 C'est *Medecine*, une aveugle étourdie,
 Qui croit par force y mettre le hola,
 A droite, à gauche, ainsi donc la voilà,
 Sans savoir où, qui frappe à l'aventure
 Sur celle-ci, comme celle-là,
 Tant qu'une enfin céda—ce fut *Nature*.

PRACTICAL OBSERVATIONS.

SECT. LVI.

OF THE ADVANTAGE OF GOOD AIR IN FEVER.

THE first object of our consideration should be, that the patient, immediately upon an attack of fever, be in as pure an air as possible.

Captain Ellis, author of a voyage to Hudson's Bay, and now governor of Georgia, gives the following account, from on board the Halifax slave-ship, at Cape Monte, Africa; viz. he took a wax-candle, of eight to the pound, and drew it through a mould, to make it of one thickness, from end to end; and found it wasted 67 grains in burning thirty minutes in the hold, which had not been ventilated in twenty-four hours: but after six hours' ventilation, it wasted $944\frac{1}{2}$ grains in the same time, viz. $\frac{1}{3}$ d more*.

When ventilation had been omitted twelve hours, he hung the ship's bell under the lower

* This is the first EUDIOMETER spoken of, and probably gave the idea to Priestley and Lavoisier. Vide Vol. I. page 337.

deck, took out the clapper, and suspended it by a line, which with its own length, made 44 inches : the angle which the rim of the bell made, with a line let fallen perpendicular from the pin on which the clapper hung, was equal to 34 degrees. He then held the clapper at the same angle, on the other side of the line, in order that the strokes at different times might be with the same force : when letting it go, it struck the bell ; in its return he caught it, and counting the vibrations, he heard them distinctly but three times ; whereas, when the hold was well ventilated, it vibrated five times, but its vibrations were not so quick in the latter as in the former case. He took all possible precautions that these experiments might be fairly tried, to prevent deception, but always found them to produce the same effect*.

We see in these curious and accurate experiments, the great difference in the purity and impurity of the air, of a ventilated and unventilated ship, and, consequently, the plain reason why, when such a foul air prevails, it not only impairs the health, but causes the death of multitudes.

The people on board were all healthy for a considerable time ; viz. till the ventilators were so spoiled by the rats eating not only the leathern, but the wooden parts of them, in such a manner,

* This account is taken from Hales on the Ventilator.

that they were obliged to give over the use of them long before they had any sickness, when, as Captain Ellis observes, many of their slaves died of extremely infectious distempers ; as small-pox, measles, fluxes, and fevers, which came upon them almost all at once.

In order the more effectually to rouse the attention of mankind, in a matter of the greatest importance to the health and lives of thousands, and thereby the more fully and clearly to convince them, I made, says the good Dr. Hales, the same kind of experiment, by placing lighted candles in foul, close, and confined airs ; it being well known, that the vital lamp of animals is either enlivened and invigorated, or incommoded and quenched, in proportion to the different degrees of purity or impurity of the air which they breathe in.

I have found, says he, after variety of trials with candles of different sizes, that the larger candles, of about six to the pound, are best for the purpose ; and in order to prepare them for these experiments, it is proper to cut off, or waste by burning, one-fourth or one-third of the candles, where they are usually smaller and taper, viz. till they are nearly of an equal cylindrical size : Then first weighing the candle, when it is well lighted, I begin to estimate the time, for its burning half an hour in good air : then I put it out with an extinguisher, that a fair snuff, with
its

its black part about half an inch long, may be preserved ; if it be too long, I snuff it to a due length, in order to fit it for further trials in foul airs, it being of great importance to begin each trial with a good snuff: the candle must be weighed again after each trial, by burning both in good and foul air: and in order to preserve a fair snuff in carrying a candle into a mine, &c. it may be well to make a case for it of cards, nailed in a semi-circular form to the sides of a flat piece of wood, about an inch and a half wide ; or to wrap it in stiff paper with a stick.

If several candles are prepared at the same time, by burning them first in a good air, they may be marked, number 1, 2, 3, by holes made near the bottom with a pin's point, and filled with ink with the nib of a pen ; for every candle which is used in these experiments must first be tried in a good air.

I desired a surgeon of the second regiment of foot-guards, to burn a wax candle, of about half an inch diameter, for half an hour, among the sick soldiers at the Savoy, where it wasted but 11 grains ; whereas the same candle, in a *good air*, had wasted in the same time 27 grains, which is more than double of what it wasted in that bad foul air : and it was often observed, that the stench there is sometimes intolerable, and that candles give but a very weak light.

Dr. Langrish made the like experiments, at my desire, with a wax candle, of six to the pound, just before the Lent Assizes, in the dungeon of Winchester Goal, in the morning, before the doors or window-shutters had been opened: the candle, which had wasted 88 grains in half an hour, in a *good air*, wasted but $66 \frac{1}{2}$ grains in the dungeon, in the same time, which is near one-fourth less; and Mr. Thomas, a surgeon of Chelsea Hospital, observed the like disproportion in burning a tallow candle, of six to the pound, where the small-pox was. After the dungeon had been well ventilated for half an hour with the ventilators, the prisoners remaining there all the while, the same candle wasted in another half hour, $87 + \frac{1}{2}$ grains, that is, very nearly as much as in the good air at first; which shews the great use of ventilators both in goals, hospitals, and ships. The doctor observed, that at the first going down into the dungeon, the foul air affected the mouth and throat with a remarkable saltness, but not at all at their going down after it had been well ventilated.

In St. George's Hospital, near Hyde Park Corner, a like tallow candle, which in a good air had wasted in half an hour $77 + \frac{1}{2}$ grains, wasted in the King's Ward, early in the morning, before fires were kindled, 70 grains, viz. $\frac{1}{11}$ th part less: and even this less degree of foulness in the air, by putrifying, is observed to cause putrid diseases,

eases, and to be very hurtful, not only to debilitated persons, but also to those with broken limbs, who have their health impaired thereby, insomuch that they find it requisite of late to leave the wards sometimes vacant, in their turns, for a time, to be aired, cleansed, and fumed with the acid fumes of burning brimstone.

I was obliged to the Reverend Mr. Emmerson, of Middleton, near Barnard Castle, Durham, for making the like experiments with lighted candles, in Lord Darlington's lead-mines, in his parish; where he found they wasted, in burning 15 minutes, in some places 7 grains, in others 11, 13, and 15 grains less than in a fresh air, more or less, according to the different states of the air, not only in the mine, but also above ground, as to its weight or lightness, wind or calm, which made some alteration.

In the drifts, while digging to the air-shafts, the air is very noxious; so that a candle will burn only when held inclining side-ways. But Mr. Emmerson having placed a small ventilator at the entrance of an adit, that was digging 50 fathom to a new air-shaft, where the miners complained much of the badness of the air when they were got about 20 fathom, insomuch that they could work but few hours at a time; yet when the air was renewed through a long trunk, which reached from the ventilators to the miners, they could then work all the day with pleasure. This
cheap

cheap and easy method of relief is, therefore, not only of great benefit to the health and lives of the miners, but will also be very profitable to the proprietors and owners of mines. On communicating the success of this method of ventilating drifts while digging, to Mr. Percival at Bristol, he put it in practice in his mines in Cornwall, and that with so good effect, that it is like to become a general practice in that country.

These and the like experiments with candles*, will be of great use to shew the degrees of unhealthiness of the foul stagnant air in goals, hospitals, ships, and mines; but with this distinction, viz. that a lesser degree of foulness of air long confined, being thereby become the more putrid, will, on that account, be more noxious than a greater degree of foulness of air which has not been long enough confined to become putrid. Thus the long stagnant air of a common goal, in which there are comparatively much fewer persons than in a ship, will breed the infectious goal distemper; whereas the much fouler air of a ship, crowded full of persons, if it has not been long enough confined to putrify, may not produce that distemper; though, when long confined, it frequently produces that distemper, the scurvy, flux, and other diseases, which are the bad consequences of a putrid air, which is the principal

* The Eudiometer of Dr. Priestley and Lavoisier, will better answer this purpose. Vide vol. I. page 337.

cause of scurvy. Perhaps frequently repeated experiments with candles in the rooms of those who are sick of different distempers, may lead to estimate the different degrees of putridness of some distempers, as also shew the different effects that putrid and unputrid distempers have on burning candles: at least it seems very probable, that repeated trials with candles, in the rooms of those who are sick of the most putrid and offensive distempers, will shew when it is requisite, in some measure, to abate the great degree of foulness of such air, by cautiously admitting fresh air, and keeping the bed-curtains close for a short time, till that fresh air is grown warm, as has been sometimes practised with success. And whereas a cool fresh air, though admitted in but small quantities into a hot air, will immediately descend, so as to be sensibly felt; might it not, therefore, be adviseable to admit the fresh cool air near the floor of the room.

Having, in the account I have given of the several campaigns*, mentioned the direful effects of the hospital-fever, I need not urge the necessity of using all precautions against it. I shall at present propose the means whereby this disease may be either kept from appearing at all, or at least with so much contagion and danger. These means shall be considered under two heads; one relating

* This is taken from Sir John Pringle.

to the choice of *hospitals*, and the other to the right management of the *air* therein.

In treating of the bloody-flux, the most airy and spacious houses that could be procured in the neighbourhood of the camp, were recommended, for the better recovery of the sick, and for preventing infection. Now the same means will also tend to prevent the hospital-fever; as the dysentery is so apt to breed it*. On these occasions, it is common to look out for close and warm houses, and therefore to prefer a peasant's house to his barn; but experience has convinced us, that it is *air* that is most requisite: for this reason not only barns, stables, granaries, and other out-houses, but, above all, churches make the best hospitals, from the beginning of June to October. Of this there was an instance in the campaign of 1747, when a large church at Maestricht was applied to that use; and where, notwithstanding above a hundred lay in it, with foul sores, fluxes, and other putrid diseases, for three months together, (during the greatest part of which time the weather was very hot) there was no appearance of contagion. Wherefore we may lay it down as a rule, that the more fresh air we let into hospitals, the less danger there is of breeding and propagating this distemper,

* The putrid effluvia of the dysenteric fæces, are not only apt to propagate the common bloody flux, but likewise to breed the malignant hospital-fever, with or without bloody stools.

It may be necessary to add the following remark: in the first part of a campaign, when inflammatory distempers prevail, such as are taken ill are then to be left behind, as their cases admit least of motion, and at the same time are not infectious. But for those that fall ill from the end of summer till the decline of autumn, as having diseases of a putrid kind, but which bear motion, and generally mend upon a *change of air*, they are therefore rather to be carried with their regiments and dispersed, than collected into one general hospital to propagate the infection.

As to the disposition of hospitals, with regard to preserving the *purity of air*, the best rule is, to admit so few patients into each ward, that a person unacquainted with the danger of bad air, might imagine there was room to take in double or triple the number. It will also be found a good expedient, when the ceilings are low, to remove some part of them, and to open the garret story to the tiles. It is incredible, in how few days the air will be corrupted in thronged and close wards: and what makes it harder to remedy the evil, is the impossibility of convincing either the nurses, or the sick themselves, of the necessity of opening the doors or windows, at any time, for air. I have always found those wards the most healthful, when, by broken windows and other wants of repair, the air could not be excluded.

In

In the first stage, as well as in all the other, the first object, continues Sir John Pringle, is to have the patient in a spacious apartment; when that cannot be done, the room or ward is to be purified, by making a succession of air by means of fires, or letting it in by doors and windows, diffusing the steams of vinegar, or the like: for, whatever medicines are given, whilst the air continues in this corrupted state, or indeed increases in it by the effluvia of the diseased, there can be little hope of a cure. Wherefore, in every stage, though the patient can breathe no other infectious air, but that of his own atmosphere, it will be necessary to keep the curtains undrawn, and use all other means to procure a free ventilation. On the strict observation of *this rule*, the cure will in a great measure depend.

The following observations made by Dr. Wind, will serve to illustrate what Sir John Pringle has here advanced.

The Middleburgh, a Dutch ship of war, sailed from the Texel in Holland, on the 25th of December 1750, and on the 12th of March 1751, entered the harbour of Curaçoa, with a healthy ship's company; one only having died during their passage from Europe. The air at Curaçoa was foggy and moist, and the weather excessively hot; so that in the beginning of April two very bad diseases distressed the crew; a putrid dysentery,

tery, attended with great pain, stench, and hiccup ; and also a violent fever, accompanied with a black vomit.

They failed on a cruize the 17th of April. The weather at sea was then moist and rainy : the diseases still continued, but not in so violent a degree as in the harbour. Those who laboured under the dysentery, were not at sea attacked with the *hiccup*, and its other bad symptoms ; neither did the *black vomit* seize those who had the fever, as when in the harbour.

None of those taken ill at sea died of either of these distempers : but when the ship returned into the harbour, in the latter end of April, the former dangerous symptoms returned ; the *hiccup* attended the dysentery, and the *black vomit* accompanied the fever, the number of the sick was greatly increased, and several of them died.

When a violent and fatal sickness raged at Cadiz, it did not extend its influence to any ship which lay at a distance from the city ; as I am informed by Dr. Maguire, an eminent physician of that place. His majesty's ship the Tweed was then at anchor in Cadiz Bay : an officer and several of her men, who had been on shore, were seized with this fever ; but all those who were sent on board the ships recovered, no bad symptoms appearing in their fever ; whilst a disease, similar to the black vomit and the yellow fever, and equally mortal, depopulated that large city.

I ac-

I acknowledge it to be new, says Dr. Lind, to propose the immediate removal of a person labouring under a violent fever, to some distant place, let the symptoms be what they will. It may be objected, that the gentlest motion will, in many such cases, affect the head and bring on a delirium, or increase the symptoms of the disease; that as uninterrupted rest and quiet appear necessary to the welfare of such patients, the hurry of motion, and even the disturbance produced by taking them out of bed, but especially the exposing of them to the open air, must be highly injurious.

The experience of many years in these matters has convinced me, that such apprehensions of danger are entirely groundless. I have had the most ample means of ascertaining, that persons labouring under fevers, fluxes, and other diseases, may with great safety be moved from one place to another; nay more, that by a removal of them, with proper care, from a bad into a *pure air*, such patients receive immediate benefit. Of many thousand patients labouring under fevers, whom I have visited in Haslar Hospital, for twenty-five years, nine-tenths of them were moved during the continuance of their fever, either from Spithead, from the ships in the harbour, or from the Marine Infirmary at Portsmouth: they were brought in boats, or otherwise, to the hospital; and I do not remember that any patient was ever injured

injured by such removal; on the contrary, I am persuaded that many hundreds, under the most dangerous and malignant symptoms of the disease, have received great benefit by the removal from the foul air of their ships into the pure air of the hospital.

In the year 1764, the kingdom of Naples furnished a very remarkable example of the healthiness of the sea air, and of the benefit of removing the sick thither, during the rage of an epidemic fever. In July, it became highly infectious, was attended with petechiæ, swellings of the parotid glands, obstinate delirium, violent vomiting, and fluxes of blood.

This disease raged, with unremitting violence, for a considerable time, till it was happily observed, that the sick who were moved into the hospitals near the sea, recovered much quicker than in other places, and few of them died. Upon this being represented to the king, money was ordered out of the treasury for the fitting up of other hospitals near the sea. In these hospitals, well ventilated, and open to the sea air, the progress of the contagion was entirely stopped; none of the nurses or attendants on the sick were infected: and even when they became crowded with sick, the number that died in them was inconsiderable in proportion to the number who died in other places.

When the *Lion*, *Spence*, and several other ships of war, were employed at Port Antonio, in the island of Jamaica, in clearing Navy Island of wood, in order to build wharfs and store-houses there, many of the men, when cutting down the wood, were seized at once with a fever and delirium. This attacked so suddenly and with so much fury, that often the person seized would with his hatchet, if not prevented, have cut to pieces the others who stood near him. Orders were issued, that as soon as the men were thus seized, they should be bled, and immediately sent on board their respective ships. The consequence was, that all who were carried on board quickly recovered ; whereas those who remained on shore, either died, or suffered a dangerous fit of sickness.

It was formerly not uncommon for six or eight of the centinels who were posted at Greenwich hospital in Jamaica, which was situated in a marsh, and is now evacuated, to be taken ill in one night, with copious vomitings or purgings, a delirium, and all the alarming symptoms of a violent fever ; of which they recovered in some hours after they were removed to Kingston.

But should a change into a purer air fail to produce such immediate effects, it will at least mitigate the symptoms of the fever ; the use of medicines will afterwards be attended with more success ;

success; and the patient will recover sooner, and will more speedily regain a vigorous state of health.

I shall here insert an observation, communicated to me by a very sensible man, who resided long in Jamaica.

I have often observed the poor seamen in the merchant service to recover from the yellow fever, solely by having the benefit of a free and constant admission of the cool sea air, into a ship anchored at a distance from the shore, where they lay utterly destitute of every assistance in sickness, and even of common necessaries, having nothing but cold water to drink, and not so much as a bed to lie upon; while gentlemen, newly arrived from England, by being shut up in small, close, suffocating chambers at Kingston, or Port-royal, expired with their whole mass of blood dissolved, flowing from every pore; the stifling heat of their room having produced a state of universal putrefaction in the body, even before death.

This supply of oxygen to the blood, is applicable to every stage of fever, and will be the object of future consideration, when we come to the enquiry whether we have any *specific remedy* for the cure of putrid fever. It must be now considered only in the light of an assistant to other means.

PRACTICAL OBSERVATIONS.

SECT. LVII.

THE METHOD OF CURE IN THE FIRST STAGE.

THE cure of the Camp Fever, depends, says Sir John Pringle, in the early use of evacuants. *Bleeding* being indispensable, it is the first thing to be done in every case, and is to be repeated once or oftener, according to the urgency of the symptoms. The vernal and latter autumnal fevers are accompanied with pleuritic and rheumatic pains, and other signs of high inflammation; and on that account require more bleeding than are necessary in the intermediate season. A person unacquainted with the nature of the distemper, and attending chiefly to the paroxysms and remissions, may be apt to omit this evacuation, and to give the bark too soon, which would bring on a very dangerous inflammatory fever. A vein may be safely opened either during the remission, or in the height of a paroxysm. For, besides that I have observed the remission to come sooner and fuller after an hæmorrhage, I have repeated experience of the safety of *bleeding* in the
hot

hot fits ; and not only in this, but in the *marsh fever*, even after coming to almost regular intermissions. Soon after bleeding, it is necessary to give an *emetic*. There is some difficulty in determining the kind of vomit ; and sometimes it may be doubtful whether any is proper or not. Vomits do harm when the stomach is inflamed, or whenever the fever has been of some standing, and assumed a continued form. But withal, it must be observed, that an inflammation of the stomach is a rarer occurrence than one would imagine, amidst so many complaints of vomiting, pain, sickness, and oppression about the epigastric region ; all which being commonly relieved by an emetic, we may, in general, very safely venture upon it. The *ippecacuanha* is the safest and easiest, but the ANTIMONIALS are the most efficacious. I commonly added two grains of *emetic tartar* to a scruple of *ippecacuanha*. The vomits that are also productive of stools, are the most useful ; but especially if they are powerful enough to procure a plentiful discharge, upwards or downwards, of the corrupted bile. *By this means they sometimes effect a cure without farther medicines.*

It was a general observation during the American war, that if an emetic was given in the first stage of fever, the fever was either stifled in its birth, or shortened in its duration, or at least rendered more benign. The same also is the observation

observation of Sir John Pringle, in his History of the Diseases of the Army.

Stationed, says the Rev. Mr. Townsend, in a country parish, my practice has been confined chiefly to the rigid fibre of laborious peasants; and, among those of them who made an early application for assistance, I never suffered fever to continue.

I have one aged servant, who in the thirty years during which he has lived with me, has frequently been attacked by fever. I have often found him in the chimney-corner, with a dry and parched skin; foul tongue; pulse frequent, hard, and strong; no appetite; thirsty; costive: yet the very first emetic, discharging a quantity of bile, of phlegm, and of indigested food, assisted by a mercurial pill at night, and followed by rhubarb with senna in the morning, has sent him after the second day to work, without even the use of the Peruvian bark.

From the earliest periods, decided opinions in favour of the exhibition of purgatives may be detected in authors of every class, as far as opportunities of consulting them have offered. Some amongst the most illustrious of modern writers, it has been already mentioned, recommend them to a considerable extent; but not one, as far as reading serves on this subject, to the degree and in the form which becomes indispensibly necessary in most instances.

That

That the cause of the protraction of fevers is often connected with the state of the mucus, as well as of the other secretions, appears from the immediate cessation or alleviation of all the symptoms on a copious discharge; and that the mucus is often vitiated in a most extraordinary manner, the senses of the observer will afford ample testimony. There are practitioners to whom these cannot prove a source of information. The extreme delicacy of some gentlemen will not permit them to carry their researches so far; yet it is from this source, and this alone, that any precise knowledge respecting the nature, probable duration, and other circumstances of the disorder, but particularly the necessity of further evacuations, can possibly be acquired.

It may be deemed particularly fortunate, says an experienced practitioner, that the *purgatives* which prove *most successful* in fevers are as mild in their operation as they are certain and powerful; that they are not subject to the inconveniences attending the other classes, for from their want of bulk they are more retainable in the stomach; and that from their full operation they may be supposed to reach more readily the sources of the evil, and to combat these with more success. Mercurial purgatives, particularly CALOMEL, continues Dr. Wade, possess these advantages in the trifling quantity of two or three grains; but such small doses are seldom of much efficacy

efficacy after the first and second, and a repetition would be esteemed rash by the generality of practitioners. They have frequently, however, in the smallest proportion, an operation so extensive, as to remove the complaint altogether, in slighter cases, by copious evacuations. But other occasions * require their exhibition in such quantities, and after intervals so short, as would terrify most of the faculty, even in India, and appear to practitioners in Europe necessarily fatal. The most trifling detriment, however, has not been observed by me in any one instance, though a discharge from the *salivary glands* has not unfrequently ensued. It may be, however, proper, as well to obviate these inconveniencies, as to render their evacuating powers more certain, to urge their operation by *other cathartics*, especially in a liquid form. It should be received as a general rule, that the calomel, either alone or in conjunction with cathartic extract, resin, or extract of jalap, scammony, gamboge, should be exhibited at night, and the medicines necessary to promote its effects given early the ensuing morning, as well as during the course of that day, according to circumstances. From two to ten or more grains of calomel, with a greater proportion of any of the other articles, may form a dose with the utmost safety; for these

* This arises from the mucus shielding the living fibre from the operation of the purge. This must be first cleared, before any effect can ensue.

medicines, as evacuants, do not act with a disturbance, nor perhaps with an efficacy, in the exact proportion of their quantities, owing to the mucus coating the intestines. These doses may and should be repeated every second night, or, according to the pressure of the symptoms, every night, as long as any thing offensive shall remain to be discharged from the bowels, in the form of grosser excrement, vitiated bile, mucus, &c. Forty or more grains of calomel, with a larger quantity of the laxative mercurial pill, have been exhibited with innocency, and with great benefit, in this manner, during the course of five or six days. Laxatives alone, or with additional efficacy from an union with **ANTIMONIALS**, should be administered, not only in the mornings after the calomel, but in smaller quantities during the whole of the intervals; a very dilute solution of *tartar emetic* alone generally answers this purpose extremely well.

As symptoms called putrid, nervous, &c. indicate the excess in quantity and vitiation of the offending matters, and consequently the greater obstinacy and danger of the disorder, notwithstanding the general prejudices against the use of mercurials as weakening in putrid cases, this course of purging by calomel is more essentially necessary when such symptoms prevail, than on any other occasion whatever.

Purging,

Purging, therefore, on the first hints from nature, will generally obviate the access of all fevers in every constitution. On the first attack of these, purging will infallibly prevent the approach of dangerous symptoms, particularly those called putrid, and, at their height, will always save, and generally cure, the patient*.

Dr. Rush† ingenuously confesses, that in his first treatment of the Yellow Fever by bark infusion, powder, or tincture, nearly all his patients died. Baffled in every trial I made to stop the ravages of this fever, I anticipated, says he, all the numerous and complicated distresses in our city, which pestilential diseases have so often produced in other countries. The fever had a malignity, and an obstinacy, which I had never before observed in any disease, and it spread with a rapidity and mortality, far beyond what it did in the year 1762. Heaven alone bore witness to the anguish of my soul in this awful situation. But I did not abandon a hope that the disease might yet be cured. I had long believed, that good was commensurate with evil, and that there does not exist a disease for which the goodness of Providence has not provided a remedy. Under the impression of this belief, I applied myself with

* This doctrine was published in 1793, and beautifully confirms Dr. Rush's practice. The work in which it is contained, is on the prevention and treatment of disorders in India, by Dr. Wade.

† Vide his History of the Yellow Fever.

fresh ardour to the investigation of the disease before me. I ransacked my library, and pored over every book that treated of the yellow fever. The result of my researches for awhile was fruitless. The accounts of the symptoms and cure of the disease by the authors I consulted, were contradictory, and none of them appeared altogether applicable to the prevailing epidemic. Before I desisted from the inquiry to which I had devoted myself, I recollected that I had among some old papers, a manuscript account of the yellow fever, as it prevailed in Virginia in the year 1741, which had been put into my hands by Dr. *Franklin*, a short time before his death. I had read it formerly, and made extracts from it into my lectures upon that disorder. I now read it a second time. I paused upon every sentence; even words in some places arrested and fixed my attention. In reading the history of the method of cure, I was much struck with the following passages:

“ It must be remarked, that this evacuation
 “ (meaning by *purges*) is more necessary in this,
 “ than in most other fevers. The abdominal vis-
 “ cera are the parts principally affected in this
 “ disease, but by this timely evacuation, their
 “ feculent corruptible contents are discharged,
 “ before they corrupt and produce any ill effects,
 “ and their various emunctories, and secreting
 “ vessels are set open, so as to allow a free dis-
 “ charge

“ charge of their contents, and consequently a
 “ security to the parts themselves, during the
 “ course of the disease. By this evacuation the
 “ very minera of the disease, proceeding from
 “ the putrid miasma fermenting with the salivary,
 “ bilious, and other inquiline humours of the body,
 “ is sometimes eradicated by timely emptying
 “ the abdominal viscera on which it first fixes, after
 “ which a gentle sweat does as it were nip it in
 “ its bud. Where the primæ viæ, but especially
 “ the stomach, is loaded with an offensive matter,
 “ or contracted and convulsed with the irritation
 “ of its stimulus, there is no procuring a laudable
 “ sweat till that is removed; after which a ne-
 “ cessary quantity of sweat breaks out of its
 “ own accord, these parts promoting it when
 “ by an absterging medicine they are eased of
 “ the burden or stimulus which oppresses them.
 “ All these acute putrid fevers ever require *some*
 “ *evacuation* to bring them to a perfect crisis and
 “ solution. On this account an *ill-timed scrupu-*
 “ *lousness about the weakness of the body*, is of bad
 “ consequence in these urging circumstances; for
 “ it is that which seems chiefly to make *evacua-*
 “ *tions* necessary, which nature ever attempts,
 “ after the humours are fit to be expelled, but is
 “ not able to accomplish for the most part in this
 “ disease; and I can affirm, that I have given a
 “ purge in this case, when the pulse has been so
 “ low

“ low that it could hardly be felt, and the debility extreme, yet both one and the other have been restored by it.

“ This evacuation must be procured by strong *cholagogue purges.*”

Here I paused. A new train of ideas suddenly broke in upon my mind. I believed the weak and low pulse which I had observed in this fever, to be the effect of debility of the indirect kind, but the unsuccessful issue of purging, and even of a spontaneous diarrhoea, in a patient of Dr. Hutchinson's, had led me not only to doubt of, but to dread its effects. My fears from this evacuation were confirmed, by the communications I had received from Dr. Stevens. I had been accustomed to raise a weak and low pulse in pneumonia and apoplexy, by means of *blood-letting*, but I had attended less to the effects of *purging* in producing this change in the pulse. Dr. Mitchell in a moment dissipated my ignorance and fears upon this subject. I adopted his theory and practice, and resolved to follow them. It remained now only to fix upon a *suitable purge* to answer the purpose of discharging the contents of the bowels. I had been in the habit of occasionally purging with *calomel* in bilious and inflammatory fevers, and had recommended the practice the year before in my lectures, not only from my own experience, but upon the authority of Dr. Clarke. I had, moreover, other precedents
for

for its use in the practice of Sir John Pringle, Dr. Cleghorn, and Dr. Balfour, in diseases of the same class with the yellow fever. But these were not all my vouchers for the safety and efficacy of CALOMEL. In my attendance upon the military hospitals during the late war, I had seen it given combined with *jalap* in the bilious fever, by Dr. Thomas Young, a senior surgeon in the hospitals. His usual dose was ten grains of each of them. This was given once or twice a day, until it procured large evacuations from the bowels. For a while I remonstrated with the Doctor against this purge, as being disproportioned to the violence and danger of the fever; but I was soon satisfied that it was as safe as cremor tartar, or Glauber's salts. It was adopted by several of the surgeons of the hospital, and was universally known, and sometimes prescribed, by the simple name of *ten and ten*. This mode of giving *calomel* occurred to me in preference to any other. The *jalap* appeared to be a necessary addition to it, in order to quicken its passage through the bowels; for calomel is slow in its operation, more especially when it is given in large doses. I resolved, after mature deliberation, to prescribe this purge. Finding ten grains of *jalap* insufficient to carry the calomel through the bowels, in the rapid manner I wished, I added *fifteen* grains of the former to *ten* of the latter; but even this dose was slow, and uncertain in its operation. I then issued three doses, each consisting of fifteen grains of

of jalap, and ten of calomel; one to be given every six hours until they procured four or five large evacuations. The effects of this powder, not only answered, but far exceeded my expectations. *It perfectly cured four out of the first five patients to whom I gave it, notwithstanding some of them were advanced several days in the disorder.* Mr. Richard Spain, a block-maker, in Third-street, took eighty grains of calomel, and rather more of rhubarb and jalap mixed with it, on the two last days of August, and on the first day of September. He had passed twelve hours before I began to give him this medicine, without a pulse, and with a cold sweat on all his limbs. His relations had given him over, and one of his neighbours complained to me of my neglecting to advise them to make immediate preparations for his interment. But in this situation I did not despair of his recovery. Dr. Mitchell's account of the effects of *purging in raising the pulse*, exciting a hope that he might be saved, provided his bowels could be opened. I now committed the exhibition of the purging medicine to Mr. Stall, one of my pupils, who mixed it, and gave it with his own hand three or four times a day. At length it operated, and produced two copious, foetid stools. His pulse *rose* immediately afterwards, and an universal moisture on his skin succeeded the cold sweat on his limbs. In a few days he was out of danger, and he now lives in good health,

health, as the first fruits of the efficacy of *mercurial purges* in the yellow fever.

After such a pledge of the safety and success of my new medicine, I gave it afterwards with confidence. I communicated the prescription to such of the practitioners as I met in the streets. I imparted the prescription to the College of Physicians, on the third of September, and endeavoured to remove the fears of my fellow citizens, by assuring them that the disease was no longer *incurable*. Mr. Lewis, the lawyer, Dr. M'Ilvaine, Mrs. Bethel, her two sons, and a servant maid, and Mr. Peter Baynton's whole family (nine in number), were some of the first trophies of this new remedy. The credit it acquired brought me an immense accession of business. It still continued to be almost uniformly effectual in all those which I was able to attend, either in person or by my pupils. Dr. Griffiths, Dr. Say, Dr. Pennington, and my former pupils who had settled in the city, viz. Dr. Leib, Dr. Porter, Dr. Annan, Dr. Woodhouse, and Dr. Mease, were among the first physicians who adopted it, I can never forget the transport with which Dr. Pennington ran across the street to inform me, a few days after he began to give strong purges, that the disease yielded to them in every case. But I did not rely upon purging alone to cure the disease. The theory of its approximate cause, which I had adopted, led me to use other remedies, to *abstract excess* of

of *stimuli* from the system. These were *blood-letting, cool air, cold drinks, low diet*, and applications of *cold water* to the body. I had bled Mrs. Bradford, Mrs. Leaming, and one of Mrs. Palmer's sons, with success, early in the month of August. Never before did I experience such sublime joy as I now felt in contemplating the success of my remedies. It repaid me for all the toils and studies of my life. The conquest of this formidable disease was not the effect of accident, nor of the application of a single remedy; but it was the triumph of *a principle* in medicine*. The reader will not wonder at this joyful state of my mind, when I add a short extract from my note book, dated the 10th of September.

“THANK GOD! OUT OF ONE HUNDRED PATIENTS, WHOM I HAVE VISITED, OR PRESCRIBED FOR, THIS DAY, I HAVE LOST NONE.”

Being unable to comply with the numerous demands which were made upon me for the *purging powders*, notwithstanding I had requested my sister, and two other persons to assist my pupils in putting them up; and finding myself unable to attend all the persons who sent for me, I furnished the apothecaries with the recipe for the mercurial purges, together with a copy of the following directions,

* How contrary this to what is called the *Brunonian Practice*, although exactly consonant to Dr. Brown's *theory*.

for giving them, and for the treatment of the disorder.

Direction.—"As soon as you are affected (whether by night or day) with a pain in the head or back, sickness at stomach, chills, or fever; more especially, if those symptoms be accompanied by a redness or faint yellowness in the eyes, take one of the powders in a little sugar and water, every six hours, until they produce four or five *large* evacuations from the bowels—drink plentifully of water gruel, or barley water, or chicken water, or any other mild drink that is agreeable, to assist the operation of the physic. It will be proper to lie in bed while the medicine is operating; by which means a plentiful sweat will be more easily brought on. After the bowels are *thoroughly* cleansed, if the pulse be *full* or *tense*, eight or ten ounces of blood should be taken from the arm, and *more*, if the tension or fullness of the pulse should continue. Balm tea, toast and water, lemonade, tamarind water, should be drank during this state of the disorder—and the bowels should be kept constantly open, either by another powder, or by small doses of cremor tartar, or cooling salts, or by common opening glysters; but if the pulse should become *weak* and *low* after the bowels are cleansed, infusions of camomile and snake-root in water, elixir of vitriol, and laudanum; also wine and water, or wine, punch,

punch, and porter should be given, and the bark; either in infusion in water, or in substance, may be administered in the intermission of the fever. Blisters may likewise be applied to the sides, neck, or head, in this state of the disorder, and the lower limbs may be wrapped up in flannels wetted in hot *vinegar*. The food should consist of gruel, sago, panada, tapioca, tea, coffee, weak chocolate, wine whey. The fruits of the season may be eaten with advantage at all times. Fresh air should be admitted into the room in all cases, and *cool* air when the pulse is full and tense. The floor should be sprinkled now and then with *vinegar*, and the discharges from the body be removed as speedily as possible."

Hitherto there had been great harmony among the physicians of the city, although there was at first a diversity of sentiment as to the nature and cure of the prevailing fever. But this diversity of sentiment and practice was daily lessening, and would probably have ceased altogether in a few days, had not the following publication, subscribed A. K. and said to be written by Dr. Adam Khun, made its appearance on the 11th of September, in the General Advertiser, from which it was copied into all the papers of the city.

PHILADELPHIA, Sept. 7th, 1793.

“ SIR,

“ I RECEIVED your letter to-day, and shall with pleasure give you every information in my power respecting the malignant fever, which proves so fatal among us. As I consider *debility* and *putrefaction* the alarming circumstances to be attended to, and to be obviated from the earliest commencement of the disease, I do not administer any *emetic*, neither do I give a *laxative*, unless indicated by costiveness, when I recommend cream of tartar, or castor oil, but prefer a clyster to either. In case of nausea I order a few bowls of *camomile tea* to be taken; if the nausea continues, it is to be relieved with the *saline draught in a state of effervescence*, *elixir of vitriol*, and if necessary, *laudanum*. The sickness of the stomach may also be alleviated by applying mint, cloves, or any other spice, with wine or spirits, to the pit of the stomach. The stomach being composed, 20 drops of *elixir of vitriol* are to be taken every two hours in a tea cup full of strong cold *camomile tea*, and if bark can be retained, two drachms of the best *pale bark*, in substance, are to be given every two hours, alternately with the *elixir of vitriol*. When an ounce of bark has been administered in this manner, the dose is to be diminished to one drachm every two hours, as the continuance of the large doses might disorder the stomach

stomach or bowels. Should the bark prove purgative, it will be necessary to give 10 or 15 drops of *laudanum* after every stool. But if the bark cannot be retained on the stomach, 20 drops of *elixir of vitriol* are to be taken every hour, and recourse must be had to *bark clysters*.

Of regimen it is needless to say much to you: ripe fruits, sago with wine, and rich wine-whey are the most proper. A spacious chamber, with a *free circulation of air*, and repeatedly changing of bed and body linen are highly necessary. If the bark clysters should bring on costiveness, the laudanum may occasionally be omitted; if this is not attended with the desired consequences, we have recourse to a common injection. Sprinkling the chamber with *vinegar*, washing the face, neck, hands, and feet with it, and then wiping them dry, will have their use. The fumes of *vinegar* and of *nitre* will contribute much to sweeten the air in the chamber.

I am, &c.

A. K.

“ N. B. The practice of applying the cold bath in fevers is not new.”

To obviate the effects of this letter upon the minds of the citizens, I published, says the humane Dr. Rush, the next day an account of the ill success which had attended the use of the remedies

dies recommended by Dr. Kuhn, in my practice, and of the happy effects of *mercurial purges* and *bleeding*. This publication was concluded with the following remarks :

.....

 I have had so many unequivocal proofs of the success of the short and simple mode which I have adopted of treating this disorder, that I am now satisfied, that under more favourable circumstances of attendance upon the sick, the disease would yield to the power of medicine with as much certainty as a *common intermitting fever*.

September 13, 1793.

BENJ. RUSH.

The above address to the citizens, produced the following letter from Dr. Kuhn to the Mayor of the city.

“ SIR,

“ IF you are of opinion that the enclosed statement can have the least tendency to abate the apprehensions of the citizens, I beg of you to make any use of it you may think proper.

I am, with respect,

Your most humble servant,

September 11, 1793.

A. KUHN.

Matthew Clarkson, Esq. Mayor }
 of the City of Philadelphia. }

This

This letter was followed by one from Dr. Stevens to Dr. Redman, the president of the College of Physicians, which was published in the Federal Gazette of the 16th of September. He argues that this disease produces *debility*, and the vis vitæ must in consequence be supported.

Dr. Rush immediately takes up the club of reason to combat the hydra prejudice, and gives the public the *theory* of his practice, with its success, when applied to the touchstone of *experience*. He thus addresses the College :

“ GENTLEMEN,

“ It is with extreme regret that I have read Dr. Stevens’s letter to the president of our College in one of the newspapers. It will, I fear, co-operate with Dr. Kuhn’s plan of treating the disorder, and Mr. Hamilton’s well-meant letter, in adding to the mortality of the disorder. If I should survive my present labours, I hope to prove that Dr. Stevens’s theory of the disease in the West Indies, is as erroneous as the practice he has recommended has been fatal in Philadelphia. It is a most inflammatory disorder in its first stage. The contagion, it is true, in its first action upon the system, frequently produces debility ; but the debility here is of the *indirect* kind, and arises wholly from an excess of the stimulus of contagion upon the system. This indirect debility, as in many other diseases, yields
only

only to the abstraction of other stimuli, and to none so speedily as to large evacuations from the bowels and the blood-vessels.

“ I have so high an opinion of Dr. Stevens’s candour and liberality as a gentleman and a physician, that I shall make no apology for thus publicly dissenting from his opinions and practice.

“ Could patients be visited by physicians as often, and attended by nurses as carefully, as in other acute diseases, I am satisfied that the mode of treating it which I have adopted and recommended, would soon reduce it in point of danger and mortality, to a level with a *common cold*.

From, Gentlemen,

Sept. 17th,
1793.

Your sincere friend and brother,

B. RUSH.”

During this controversy with the opinions and practice of Dr. Kuhn and Dr. Stevens, I also published in the Federal Gazette, the following letter to the College of Physicians ; also some additions to the directions I had given with the mercurial purges.

“ GENTLEMEN,

“ As the weekly meetings of our College have become no longer practicable, I have taken the liberty of communicating to you the result of further observations upon the prevailing epidemic.

“ I have

* I have found bleeding to be useful, not only in cases where the pulse was full and quick, but where it was *slow* and *tense*. I have bled in one case, where the pulse beat only 48 strokes in a minute, and recovered my patient by it. The pulse became more full and more frequent after it.

“ I have bled twice in many, and in one acute case four times, with the happiest effects. I consider intrepidity in the use of the *lancet* at present to be as necessary, as is the use of *calomel* and *jalap*, in this insidious and ferocious disease.

From, Gentlemen,

Sept. 12th,
1793.

Your friend and brother,

BENJ. RUSH.”

In support of the efficacy of these remedies, Dr. Porter, Dr. Annan, and Dr. Mease, gave very decided testimonies in the public papers. I shall insert as an epitome of them all, the following letter from Dr. Porter.

“ DEAR SIR,

“ As I know it will afford you much pleasure, I send you the following statement of cases. Within three days past I have been called to thirty-seven persons labouring under the prevailing epidemic. I have treated them all in the new method, with the greatest success; nearly half of them are so far recovered as to require no farther assistance from me. I cannot avoid mentioning

tioning one case of a man in whom the advantages of bleeding were remarkable.—The pain in his head was so violent as to lead me to order bleeding previous to purging—from some inaccuracy in the operation, he lost a greater quantity than I directed, his attendants suppose sixteen ounces; the consequence however was, that at my next visit I found that my patient had walked out perfectly recovered. This case was clearly marked with all the symptoms attendant on the disease in its first stages, particularly pain in the head and redness in the eyes.

With great regard,

I am your obedient servant,

September 17th,

JOHN PORTER."

Dr. Rush.

The best confirmation of this doctrine, is the case of Dr. Rush, as drawn up by himself.

Sometime before the fever made its appearance, says he, my wife and children went into the state of New Jersey, where they had long been in the habit of spending the summer months. My family, about the 25th of August, consisted of my mother, a sister who was on a visit to me, a black servant man, and a mulatto boy. I had five pupils, viz. Warner Washington, and Edward Fisher, of Virginia, John Alston of South Carolina, and John Redman Coxe (grandson to Dr. Redman),
and

and John Stall, both of this city. They all crowded around me upon the sudden encrease of business, and with one heart devoted themselves to my service, and to the cause of humanity.

The credit which the new mode of treating the disease acquired in all parts of the city, produced an immense influx of patients to me from all quarters. My pupils were constantly employed; at first in putting up purging powders, but, after a while, only in bleeding and visiting the sick.

Between the 8th and the 15th of September, I visited and prescribed for between an hundred and an hundred and twenty patients a day. Several of my pupils visited a fourth or fifth part of that number. For a while we refused no calls. In the short intervals of business which I spent at my meals, my house was filled with patients, chiefly the poor, waiting for advice. For many weeks I seldom ate without prescribing for numbers as I sat at my table. To assist me at these hours, as well as in the night, Mr. Stall, Mr. Fisher, and Mr. Coxe, accepted of rooms in my house, and became members of my family. Their labours now had no remission.

From my great intercourse with the sick, my body became highly impregnated with the contagion. My eyes were yellow, and sometimes a yellowness was perceptible in my face. My pulse was preternaturally quick, and I had profuse sweats

sweats every night. These sweats were so offensive as to oblige me to draw the bed-cloaths close to my neck to defend myself from their smell. They lost their fœtor entirely upon my leaving off the use of broth, and living intirely upon milk and vegetables. But my nights were rendered disagreeable, not only by these sweats, but by the want of my usual sleep, produced in part by the frequent knocking at my door, and in part by anxiety of mind, and the stimulus of the contagion upon the system. I lay down in conformity to habit only, for my bed ceased to afford me rest or refreshment. When it was evening, I wished for morning; and when it was morning, the prospect of the labours of the day, caused me to wish for the return of evening. The degrees of my anxiety may be easily conceived, when I add, that I had at one time upwards of thirty heads of families under my care: among these were Mr. Josiah Coates, the father of eight, and Mr. Benjamin Scull, and Mr. John Morrell, each fathers of ten children. They were all in imminent danger; but it pleased God to make me the instrument of saving each of their lives. I rose at 6 o'clock, and generally found a number of persons waiting for advice in my shop or parlour. Hitherto the success of my practice gave a tone to my mind, which imparted preternatural vigour to my body. It was meat and drink to me to fulfil the duties I owed to my fellow citizens in
this

this time of great and universal distress. From a hope that I might escape the disease, by avoiding every thing that could excite the contagion in my body into action, I carefully avoided the heat of the sun, and the coldness of the evening air. I likewise avoided yielding to every thing that should raise or depress my passions. But at such a time, the events which influence the state of the body and mind, are no more under our command than the winds or weather. On the evening of the 14th of September, after eight o'clock, I visited the son of Mrs. Berriman, near the Swedes church, who had sent for me early in the morning. I found him very ill. He had been bled in the forenoon by my advice, but his pulse indicated a second bleeding. It would have been difficult to procure a bleeder at that late hour. I therefore bled him myself. From hanging over his breath and blood for ten minutes, and afterwards riding home in the night air, debilitated as I was by the labours of the day, I found myself much indisposed the ensuing night. I rose notwithstanding at my usual hour. At 8 o'clock I lost *ten ounces of blood*, and immediately afterwards got into my chair, and visited between forty and fifty patients before dinner. At the house of one of them, I was forced to lie down a few minutes. In the course of this morning's labour, my mind was suddenly thrown off its pivots, by the last look, and the pathetic cries of a friend
for

for *help*, who was dying under the care of a French physician. I came home about two o'clock, and was seized immediately afterwards with a chilly fit and a high fever. I took a dose of the *mercurial medicine*, and went to bed. In the evening I took a *second purging powder*, and lost *ten ounces* more of blood. The next morning I bathed my face, hands, and feet in *cold water* for some time. I drank plentifully during the day and night of *weak hyson tea*, and of *water* in which *currant jelly* had been dissolved. At 8 o'clock I was so well as to admit persons who came for advice into my room, and to receive reports from my pupils of the state of as many of my patients as they were able to visit; for unfortunately they were not able to visit them all (with their own) in due time; by which means several died. The next day I came down stairs, and prescribed in my parlour for not less than an hundred people. On the 19th of the same month, I resumed my labours, but in great weakness. It was with difficulty that I ascended a pair of stairs, by the help of a banister. A slow fever, attended with irregular chills, and a troublesome cough, hung constantly upon me. The fever discovered itself in the heat of my hands, which my patients often told me were warmer than their own. The contagion now began to affect me in small and infected rooms, in the most sensible manner. On the morning of the 4th of October, I suddenly sunk down in a sick room

room upon a bed, with a giddiness in my head. It continued for a few minutes, and was succeeded by a fever which confined me to my house the remaining part of the day. Every moment, in the intervals of my visits to the sick, was employed in prescribing in my own house for the poor, or in sending answers to messages from my patients; time was now too precious to be spent in counting the number of persons who called upon me for advice. From circumstances, I believe it was frequently 150, and seldom less than 50 in a day, for five or six weeks. The evening did not bring with it the least relaxation from my labours. I received letters every day from the country, and from distant parts of the Union, containing inquiries into the mode of treating the disorder, and after the health and lives of persons who had remained in the city. The business of every evening was to answer these letters, also to write to my family. These employments, by affording a fresh current to my thoughts, kept me from dwelling on the gloomy scenes of the day. After these duties were performed, I copied into my note book all the observations I had collected during the day, and which I had marked with a pencil in my pocket-book in sick rooms, or in my carriage. To these constant labours of body and mind were added *distresses*, from a variety of causes. Having found myself unable to comply with the numerous applications that were made to me,

I was

I was obliged to refuse many every day. My sister counted forty-seven in one forenoon before 11 o'clock. Many of them left my door with tears, but they did not feel more distress than I did from refusing to follow them. Sympathy, when it vents itself in acts of humanity, affords pleasure, and contributes to health, but the reflux of pity, like anger, gives pain, and disorders the body. In riding through the streets, I was often forced to resist the entreaties of parents imploring a visit to their children, or of children to their parents. I recollect, and even yet, I recollect with pain, that I tore myself at one time from five persons in Moravian-alley, who attempted to stop me, by ordering the man to drive as speedily as possible beyond the reach of their cries. The solicitude of the friends of the sick for help, may further be conceived of, when I add, that the most extravagant compensations were sometimes offered for medical services, and, in one instance, for only a single visit. I had no merit in refusing these offers, and I have introduced an account of them only to inform such physicians as may hereafter be thrown into a similar situation, that I was favoured with an exemption from the fear of death, in proportion as I subdued every selfish feeling, and laboured exclusively for the benefit of others. In every instance in which I was forced to refuse these pathetic and earnest applications, my distress was heightened by the fear, that the persons

persons whom I was unable to visit, would fall into improper hands, and perish by the use of bark, wine, and laudanum.

But I had other afflictions besides the distress which arose from the abortive sympathy which I have described. On the 11th of September, my ingenious pupil Mr. Washington fell a victim to his humanity. He had taken lodgings in the country, where he sickened with the disorder. Having been almost uniformly successful in curing others, he made light of his fever, and concealed the knowledge of his danger from me, until the day before he died. On the 18th of September Mr. Stall sickened in my house. A delirium attended his fever from the first hour it affected him. He refused, and even resisted force when used to compel him to take medicine. He died on the 23d of September. Scarcely had I recovered from the shock of the death of this amiable youth, when I was called to weep for a third pupil, Mr. Alston, who died in my neighbourhood the next day. He had worn himself down before his sickness by uncommon exertions in visiting, bleeding, and even sitting up with sick people. At this time Mr. Fisher was ill in my house. On the 26th of the month, at 12 o'clock, Mr. Coxe, my only assistant, was seized with the fever, and went to his grandfather's. I followed him with a look which I feared would be the last in my house.

At two o'clock, my sister, who had complained for several days, yielded to the disorder, and retired to her bed. My mother followed her, much indisposed, early in the evening. My black servant-man had been confined with the fever for several days, and had on that day for the first time quitted his bed. My little mulatto boy, of eleven years old, was the only person in my family who was able to afford me the least assistance. At eight o'clock in the evening I finished the business of the day. A solemn stillness at that time pervaded the streets. In vain did I strive to forget my melancholy situation by answering letters, and by putting up medicines, to be distributed next day among my patients. My faithful black man crept to my door, and at my request sat down by the fire ; but he added, by his silence and dullness, to the gloom which suddenly overpowered every faculty of my mind.

From this time I declined in health and strength. All motion became painful to me. My appetite began to fail. My night sweats continued. My short and imperfect sleep was disturbed by distressing or frightful dreams. The scenes of them were derived altogether from sick rooms and grave yards. I concealed my sorrows as much as possible from my patients ; but when alone, the retrospect of what was past, and the prospect of what was before me, the termination of which was invisible, often filled my soul with
the

the most poignant anguish. I wept frequently when retired from the public eye; but I did not weep over the lost members of my family alone. I beheld or heard every day of the deaths of citizens useful in public, or amiable in private life.

I have said before, that I early left off drinking wine; but I used it in another way. I carried a little wine in a phial in my pocket; and when I felt myself faint, after coming out of a sick room, or after a long ride, I kept about a spoonful of it in my mouth for half a minute, or longer, without swallowing it. So weak and excitable was my system, that this small quantity of wine refreshed and invigorated me as much as half a pint would have done at any other time. The only difference was, that the vigour I derived from the wine in the former was of shorter duration than when taken in the latter way.

For the first two weeks after I visited patients in the yellow fever, I carried a rag wet with *vinegar*, and smelled to it occasionally in sick rooms: but after I saw and felt the signs of the universal presence of the contagion in my system, I laid aside this, and all other precautions. I rested myself on the bedside of my patients, and I drank milk, or eat fruit in their sick rooms. Besides being saturated with the contagion, I had another security against being infected by my patients; and that was, I went into scarcely a house

which was more infected than my own. Most of the people who called upon me for advice left a portion of contagion behind them. Four persons died next door to me on the east; three a few doors above me on the west; and five in a small frame house on the opposite side of the street, towards the south. On the north side, and about one hundred and fifty feet from my house, the fever prevailed with great malignity in the family of Mr. James Cresson. But this was not all. Many of the poor people who called upon me for advice, were bled by my pupils in my shop, and in the yard, which was between it and the street. From the want of a sufficient number of bowls to receive their blood, it was sometimes suffered to flow upon the ground. From all these sources, streams of contagion were constantly poured into my house, and conveyed into my body by the air, and in my aliment. Thus charged with the fuel of death, I was frequently disposed to say with Job, and almost without a figure, to "corruption, thou art my father; and to the worm, thou art my mother and my sister."

The deaths of my pupils have often been urged as objections to my mode of treating the fever. Had the same degrees of labour and fatigue which preceded the attack of the yellow fever in each of them, preceded an attack of a common pleurisy, I think it probable that some, or perhaps all of them, would have died with it. But
when

when the influence of the concentrated contagion which filled my house, was added to that of constant fatigue upon their bodies, what remedies could be expected to save their lives? Under the above circumstances, I consider the recovery of the other branches of my family from the fever (and none of them escaped it) with emotions, such as I should feel, had we all been revived from apparent death by the exertions of an humane society.

For upwards of six weeks I did not taste animal food, nor fermented liquors of any kind. The quantity of aliment which I took, inclusive of drinks, during this time, was frequently not more than one or two pounds in a day. Yet upon this diet I possessed for awhile uncommon activity of body. This influence of abstinence upon bodily exertion, has been happily illustrated by Dr. Jackson, in his directions for preserving the health of soldiers in hot climates. He tells us that he walked an hundred miles in three days in Jamaica, during which time he breakfasted on tea, supped on bread and salad, and drank nothing but lemonade or water. He adds further, that he walked from Edinburgh to London in eleven days and an half, and that he travelled with the most ease when he only breakfasted and supped, and drank nothing but water. The fatigue of riding on horseback, is prevented or lessened by abstinence from solid food. Even the horse suffers least

least from a quick and long journey, when he is fed sparingly with hay. These facts add weight to the arguments formerly adduced in favour of a vegetable diet in mitigating the action of the contagion of malignant fevers upon the system. In both cases the abstraction of stimuli removes the body further from the reach of *indirect* debility.

Food supports life as much by its stimulus, as by affording nourishment to the body. Where an artificial stimulus acts upon the system, the natural stimulus of food ceases to be necessary. Under the influence of this principle, I increased or diminished my food with the signs I discovered of the increase or diminution of the contagion in my body. Until the 15th of September I drank weak coffee, but after that time I drank nothing but milk, or milk and water, in the intervals of my meals. I was so satisfied of the efficacy of this mode of living, that I believed life might have been preserved, and a fever prevented, for many days with a much greater accumulation of the contagion in my system, by means of a total abstinence from food. Poison is a relative term, and an excess in quantity, or a derangement in place, is necessary to its producing deleterious effects. The contagion of the yellow fever produced sickness and death only from the excess of its quantity, or *from its force being increased by the addition of those other stimuli which I have elsewhere called exciting causes.*

In addition to low diet, as a preventive of the disorder, I obviated costiveness by taking occasionally a calomel pill, or by chewing rhubarb.

On the ninth of October, I visited a considerable number of patients, and as the day was warm, I lessened the quantity of my clothing. Towards evening I was seized with a pain in the back, which obliged me to go to bed at eight o'clock. About twelve I awoke with a chilly fit. A violent fever, with acute pains in different parts of my body, followed it. At one o'clock I called for Mr. Fisher, who slept in the next room. He came instantly, with my affectionate black man, to my relief. I saw my danger painted in Mr. Fisher's countenance. He *bled* me plentifully, and gave me a dose of the *mercurial medicine*. This was immediately rejected. He gave me a second dose, which likewise acted as an *emetic*, and discharged a large quantity of bile from my stomach. The remaining part of the night was passed under an apprehension that my labours were near an end. I could hardly suspect to survive so violent an attack of the fever, broken down, as I was, by labour, sickness, and grief. My wife and seven children, whom the great and distressing events that were passing in our city, had jostled out of my mind for six or seven weeks, now resumed their former place in my affections. My wife had stipulated in consenting to remain in the country, to come to my
assistance

assistance in case of my sickness ; but I took measures, which, without alarming her, proved effectual in preventing it. My house was a Lazaretto, and the probability of my death, made her life doubly necessary to my family. In the morning the medicine operated kindly, and my fever abated. In the afternoon it returned, attended with a great inclination to sleep. Mr. Fisher *bled* me *again*, which removed the sleepiness. 'The next day' the fever left me, but in so weak a state, that I awoke two successive nights with a faintness which threatened the extinction of my life. It was removed each time by taking a little aliment. My convalescence was extremely slow. I returned in a very gradual manner to my former habits of diet. The smell of animal food, the first time I saw it at my table, forced me to leave the room. During the month of November, and all the winter months, I was harassed with a cough, and a fever somewhat of the hectic kind. The early warmth of the spring removed those complaints, and I now enjoy, through divine goodness, my usual state of health.

In speaking of the comparative effects of purging and bleeding, it may not be amiss to mention, says Dr. Rush, that not one pregnant woman to whom I prescribed them died, or suffered abortion. Where the tonic remedies were used, abortion or death, and in many instances both, were nearly universal.

Many

Many whole families, consisting of five, six, and in three instances, of nine members, were recovered by plentiful purging and bleeding. I could swell this work by publishing a list of those families ; but I take more pleasure in adding, that I was not singular in my success in the use of the above remedies. They were prescribed with great advantage by many of the physicians of the city, who had for awhile given tonic medicines without effect. I shall not mention the names of any of the physicians who totally renounced those medicines, lest I should give offence by not mentioning them all. Many large families were cured by some of them, after they adopted and prescribed copious purging and blood-letting. One of them cured ten in the family of Mr. Robert Haydock, by means of these remedies. In one of that family, the disease came on with a vomiting of black bile.

But the use of the new remedies was not directed finally by the physicians alone. The clergy, the apothecaries, many private citizens, several intelligent women, and two black men, prescribed them with great success. Nay, more, many persons prescribed them to themselves ; and as I shall say hereafter, with a success that was unequalled by any of the regular or irregular practitioners in the city.

It was owing to the almost universal use of purging and bleeding, that the mortality of the disease

disease diminished, in proportion as the number of persons who were affected by it encreased, about the middle of October. It was scarcely double of what it was in the middle of September, and yet six times the number of persons were probably at that time confined by it.

The success of copious purging and bleeding was not confined to the city of Philadelphia. Several persons who caught the disease in town, and sickened in the country, were cured by them.

Not less than 6,000 of the inhabitants of Philadelphia probably owe their lives to purging and bleeding during the late autumn.

I have said that the clergy, the apothecaries, and many other persons who were uninstructed in the principles of medicine, prescribed purging and bleeding with great success in this disorder. Necessity gave rise to this undisciplined sect of practitioners, for they came forward to supply the places of the regular bred physicians who were sick or dead. I shall mention the names of a few of those persons who distinguished themselves as volunteers in this new work of humanity. The late Rev. Mr. Fleming, one of the ministers of the Catholic church, carried the purging powders in his pocket, and gave them to his poor parishioners with great success. He even became the advocate of the new remedies. In a conversation I had with him on the 22d of September, he informed me, that he had advised four of our physicians,

physicians, whom he met a day or two before, "to renounce the pride of science, and to adopt the new mode of practice, for that he had witnessed its good effects in many cases." Mr. John Keihmle, a German apothecary, has assured me, that out of 314 patients whom he visited, and 187 for whom he prescribed, from the reports of their friends, he lost only 47 (which is nearly but one in eleven), and that he treated them all agreeably to the method which I had recommended. The Rev. Mr. Schmidt, one of the ministers of the Lutheran church, was cured by him. I have before mentioned an instance of the judgment of Mr. Connelly, and of his zeal in visiting and prescribing for the sick. His remedies were bleeding and purging. He moreover bore a constant and useful testimony against bark, wine, laudanum, and the warm bath. Mrs. Paxton, in Carter's Alley, and Mrs. Evans, the wife of Mr. John Evans, in Second-street, were indefatigable; the one in distributing mercurial purges, composed by herself, and the other in urging the necessity of *copious* bleeding and purging among her friends and neighbours, as the only safe remedies for the fever. These women were the means of saving many lives. Absalom Jones, and Richard Allen, two black men, spent all the intervals of time, in which they were not employed in burying the dead, in visiting the poor who were sick, and in bleeding and purging them, agreeably to the directions

directions which had been printed in all the newspapers. Their success was unparalleled by what is called regular practice. This encomium upon the practice of the blacks, will not surprise the reader when I add, that they had no fear of putrefaction in the fluids, nor of the calumnies of a body of fellow citizens in the republic of medicine, to deter them from plentiful purging and bleeding. They had besides no more patients than they were able to visit two or three times a day. But great as their success was, it was exceeded by those persons who, in despair of procuring medical aid of any kind, purged and bled themselves. This palm of superior success will not be withheld from those people, when I explain the causes of it. It was owing to their *early* use of the proper remedies, and to their being guided in the repetition of them, by the continuance of a tense pulse, or of pain and fever. A day, an afternoon, and even an hour, were not lost by these people in waiting for the visit of a physician, who was often detained from them by sickness, or by new and unexpected engagements, by which means the precious moment for using the remedies with effect, passed irrevocably away. I have stated these facts from faithful inquiries, and numerous observations.

From a short review of this account, reason, and humanity, awake from their long repose in medicine, and unite in proclaiming, that it is time to
take

take the cure of pestilential fevers out of the hands of physicians, and to place it in the hands of the people. Let not the reader startle at this proposition. I shall give the following reasons for it:

1st. In consequence of these pestilential fevers affecting a great number of persons at one time, it has always been, and always will be impossible for them *all* to have the benefit of medical aid, more especially as the proportion of physicians to the number of sick is generally diminished upon these occasions, by desertion, sickness, and death.

2d. The safety of committing to the people the cure of pestilential fevers, particularly the yellow fever and the plague, is established by the simplicity and uniformity of their proximate cause, and of their remedies. However diversified they may be in their symptoms, the system in both diseases is always at first under a state of *indirect* debility, and in all cases requires the abstraction of stimuli in a greater or less degree, either in a sudden or gradual manner. There can never be any danger of the people injuring themselves by mistaking any other disease for a yellow fever, or plague, for no other febrile disorder can prevail with them.

3d. The history of the yellow fever in the West Indies, proves the advantage of trusting patients to their own judgment. Dr. Lind has remarked, that a greater proportion of sailors who had no physicians, recovered from that fever, than of those who had the best medical assistance. The
fresh

fresh air of the deck of a ship, a purge of salt water, and the free use of cold water, were found, says he, to triumph here over the *cordial juleps* of physicians.

4th. By committing the cure of this and other pestilential diseases to the people, all those circumstances which prevented the universal success of purging, and bleeding in our late epidemic, will have no operation. The remedies will be used the *moment* the disease is felt or even seen, and the contagion generated by it will be feeble, and propagated only to a small distance from such patients. There will then be no disputes among *physicians* about the nature of the disease to distract the public mind, for *they* will seldom be consulted in it. None will suffer from forboding fears of death, or despair of recovery, to invite an attack of the disease, or to ensure its mortality.

The small-pox was once as fatal as the yellow fever and the plague. At present, it yields as universally to a vegetable diet, and evacuations, in the hands of apothecaries, the clergy, and even of good old women, as it does in the hands of doctors of physic.

They have narrow conceptions, not only of the Divine goodness, but of the gradual progress of human knowledge, who suppose that all pestilential diseases shall not, like the small-pox, sooner or later cease to be the scourge and terror of mankind.

The information derived from Dr. Jackson of the British army, affords strong testimony on this subject, viz. "that he had cured 19 out of 20, of all the soldiers whom he attended, by copious bleeding, provided it was performed within six hours after the attack of the fever. Beyond that period it mitigated its force, but seldom cured. The quantity of blood drawn in this early stage of the disease was always from 20 to 30 ounces."

It was our English Hippocrates, however, who first taught this doctrine. I am of opinion, says Sydenham, that the plague is a truly inflammatory disease. If this opinion of mine should appear to any one unsatisfactory, let him consider the several particulars attendant on it; as for instance:

1st. The colour of the blood taken away, which plainly resembles that taken away in pleuritic and rheumatic disorders.

2d. The dark livid colour of the carbuncles, not unlike the mark left by an actual cautery.

3d. The buboes, which are equally disposed to inflammation, as other tumours of any kind, and terminate by way of abscess, as most inflammations usually do.

4th. The season of the year in which an epidemic plague arises seems likewise to strengthen my opinion, for at the same time, namely betwixt Spring and Summer, pleurifies, quinsies, and other inflammatory diseases, usually prevail;
and

and I never knew these more frequent than they were for some weeks preceding the beginning of the late plague at London*.

But here perhaps it may be asked, allowing the plague to be an inflammatory disease, how it happens that heating medicines, as most alexipharmics are, should be so successfully used, both for *prevention* and *cure*. To this I reply, that these medicines only relieve by accident, inasmuch as this depends upon their procuring *sweat*, whereby the inflamed particles of the blood are exhaled and expelled; but if they fail of raising a sweat, as it frequently happens, the blood, being more inflamed by this additional heat, soon manifests the bad effects of such kind of remedies. As to *prevention*, I am well aware how much the use of warm antidotes is generally commended, but with what advantage has not yet appeared. Too free an use of wine, and the taking of other strong preservatives every day, at set hours, have occa-

* Sydenham, however, elsewhere observes, that the air signifies nothing, unless there is contagion stalking abroad; for the very same year, says he, which proved fatal to so many thousands, was otherwise very mild and healthy, and that such as escaped the plague never enjoyed better health; and likewise, that those who recovered were not subject to a cachexy, and other indispositions usually arising from the foul remains left by preceding distempers; and farther, that imposthumes and carbuncles, though of the largest size after the inflamed particles, together with the sanies, was discharged, were easily cured by the common chirurgical methods.

tioned

sioned this disease in numbers of persons, who otherwise might probably have escaped it.

As to the cure of these fevers, some perhaps will accuse me of presumption and imprudence for undertaking to treat thereof, as having lived at some distance from the town, during the greatest part of the time the late plague prevailed, and consequently being not sufficiently furnished with observations relating thereto. But since some physicians of greater abilities, who courageously stayed in town at the peril of their lives, whilst the plague raged, have yet had no inclination to publish what they have learnt, by frequent observation, respecting its nature, it is hoped every good man will excuse me for communicating *my sentiments* of it, founded on a few of my own observations.

And first, the indications of cure are to be considered; which must always be directed either (1) to assist nature in expelling the disease, keeping closely to her method of procedure herein; or (2) distrusting the method she usually takes to overcome the intestine enemy, to substitute a different and safer method from art.

Since then it appears quite unsafe to follow nature in her method of curing this disease, we are in the next place to consider in what manner the second intention is to be answered, which consists in attempting the cure by a different one. And this I conceive is only to be effected by

bleeding or sweating. As to the *former*, I am well aware that it is generally *condemned* in this disease; but, setting aside *vulgar prejudices*, I shall here briefly and equitably examine the reasons usually brought against it.

And, first, I appeal to the physicians who continued in town during the late plague for an answer to this question, Whether free and repeated bleeding, before a swelling appeared, was ever observed to prove fatal to any of the infected? But it is not at all to be wondered at, that bleeding in a small quantity, or after the appearance of a swelling, should always be prejudicial: for in the former case the management of the cure is taken out of the hands of nature, who used all her endeavours to raise a tumour, without substituting in its stead any other sufficiently effectual method to expel the morbid matter; and, in the latter, bleeding, by attracting from the circumference to the center, occasions a directly opposite motion to that of nature, which is made from the center to the circumference. And yet nothing is more frequently urged as a capital argument, by those who condemn bleeding in general in this disease, than the *mischiefs* of *bleeding* in this improper manner; as may be collected from Diemerbroeck, and other writers of observation. But for my own part I cannot assent to their reasonings, till I know what answer they will make to the question above proposed: for I am well aware
that

that several writers of great character have judged bleeding proper in the plague ; the principal of which are, Ludovicus Mercatus, Joannes Cof-tæus, Nicolaus Maffa, Ludovicus Septalius, Trin-cavellius, Forestus, Mercurialis, Altomarus, Paf-chalius, Andernachus, Pereda, Zaçutus Lufitanus, Fonfeca, &c. But Leonardus Botallus, a celebrated phyfician of the laft century, is the only one I know of who places *the whole of the cure in as copious bleeding as we demand*. I fhall tranfcribe his words, that I may not be judged fingular in this practice.

“ Briefly, fays our author, I conceive there is
 “ no plague wherein *bleeding* may not prove more
 “ beneficial than all other remedies, provided it be
 “ *feafonably ufed, in due quantity* ; and am of opi-
 “ nion that the reason of its having fometimes
 “ done no fervice, proceeds either from having
 “ had recourfe to it *too late*, or the *too fparing ufe*
 “ thereof, or to fome error in both thefe particu-
 “ lars.” And a little farther he fubjoins, “ that
 “ if our apprehenfion be fo confiderable as to
 “ prevent our taking away enough blood, how is
 “ it poffible to judge exactly what good or mif-
 “ chief bleeding may do in this difeafe ? For if
 “ a difeafe, in which four pounds of blood are
 “ required to be taken away, in order to its cure,
 “ and yet but one is taken away, ~~deftroys~~ the pa-
 “ tient, it does not therefore prove ~~deftroductive~~
 “ becaufe bleeding was ufed, but becaufe it was
 K k 2 “ performed

“ performed in an improper manner : but male-
 “ volent and indolent men always endeavour to
 “ fix the failure on a particular remedy, not be-
 “ cause it did really do mischief, but because they
 “ corruptly desire to have this remedy generally
 “ discredited. Or, supposing there be no *malice*
 “ in their attempt, they cannot be excused from
 “ *ignorance*, and following a bad custom herein ;
 “ both which are doubtless pernicious, but the
 “ former much more so.” Then proceeding to
 confirm his reasonings from experience, he has
 these words a little lower : “ These particulars be-
 “ ing attended to, no sensible person can justly
 “ censure bleeding, but must rather highly esteem
 “ and commend it as a *divine remedy*, and practise
 “ it with *assurance* ; which indeed *I have done for*
 “ *these fifteen years past*. And in pestilential dis-
 “ eases, at the siege of Rochel, and four years
 “ ago, at Mons, in the province of Henault, at
 “ Paris for these two years, and the preceding
 “ year at Cambray, I found no remedy quicker and
 “ safer in its effect in all my patients, whose num-
 “ ber was very considerable, than *plentiful* and
 “ *seasonable bleeding*.” To these remarks the au-
 thor adds some instances of persons cured by
 this method, which I here omit for brevity sake ;
 and I must beg leave to relate an uncommon history
 of a fact, no way foreign to our present subject,
 which happened a few years since in England.

At the same time, when, amongst the other
 calamities

calamities of the civil war that severely afflicted this nation; the plague also raged in several places, it was brought by accident from another place to Dunstar-castle in Somersetsfhire, where some of the soldiers dying suddenly with an eruption of spots, it likewise seized several others. It happened at that time, that a surgeon, who had travelled much in foreign parts, was in the service there, and applied to the governor for leave to assist his fellow soldiers, who were afflicted with this dreadful disease, in the best manner he was able, which was accordingly granted. His method was, at the beginning of the disease, and before a swelling could be perceived, *to take away so large a quantity of blood, that they were ready to faint and drop down*; for he bled them as they stood, in the open air, and had no vessels to measure the blood, which falling on the ground, the quantity each person lost could not of course be known. The operation being over, he sent them to lie in their tents; and *though he gave no kind of remedy after bleeding*, yet, of the number that were thus treated, *not a single person died* *. I had this relation,

* We have the following curious note on Sydenham, by Dr. Swan, his translator, so blind is prejudice, and the appreciation of truth. "The success that attended this very singular method, will, in all probability, be no encouragement to a prudent practitioner to attempt the same upon a like occasion, nor *screen the author from the censures he seems justly liable to on account of his VIOLENT and IMPROPER MEASURES*. To bleed in so irregular

tion, continues Sydenham, from Col. Francis Windham, a gentleman of great honour and veracity, and at that time governor of the castle.

I shall now attempt to set down what I have met with deserving notice, with respect to this subject, being about to deliver the few observations I was enabled to make whilst the late London plague prevailed.

Whether the fever under consideration deserves to be entitled a plague, I dare not positively affirm; but this I know by experience, that all who were seized with the true plague, attended with all its peculiar concomitants, in my time, had the same train of symptoms both in the beginning and course of the disease. But when there was danger from the near approach of the plague to the house wherein I lived, yielding at length to the

gular and extravagant a manner, in a disease that is generally accompanied with an extreme lowness of spirits and loss of strength, seems a very IRRATIONAL and UNSAFE PRACTICE; but to treat a number of persons thus, without any regard to the difference of constitution, the different manner of their being affected, and other circumstances, argues great RASHNESS, UNSKILFULNESS, and an OBSTINATE ATTACHMENT to a *vague, disorderly, and ill-established* EMPIRICISM. Not to mention that some would lose more blood than others, before they became faint, which, however, appears to have been the circumstances that determined him to stop the bleeding; and that the quantity lost must have differed considerably in particulars, as the orifice happened to be smaller or larger, and the blood thicker or thinner; whence again, it is manifest, he acted rather by CAPRICE and HUMOUR, than *sound and deliberate judgment*.

solicitations

solicitations of my friends, I accompanied the vast numbers that quitted the city, and removed my family some miles distant from it. But I returned to town in so short a time, and whilst the plague yet raged so violently, that on account of the scarcity of abler physicians, I could not avoid being called to assist the infected; and trusting to my own experience, as a guide to be preferred to all manner of airy notions, I scrupled not to direct *bleeding*, as I had formerly done in the like cases.

I continued this practice of plentiful bleeding, along with the use of a ptisan and a cooling diet, in numbers with *wonderful success*; until at length it failed me, through the *obstinacy* of the patients friends, who were so *unreasonably prejudiced against it*, as not to let enough blood be taken away, to the great detriment of the diseased, from whom, as the cure turned chiefly upon bleeding either a sufficient quantity of blood, or none at all was to be taken away. Finding my endeavours so warmly opposed, I judged that the discovering *another method* of curing this disease would be of eminent service for the future.

I shall here, however, relate an instance of the mischief I once innocently did, not by bleeding, but because I was hindered from taking away as much blood as I judged requisite. I was called to a young man, who had been seized with a violent

lent fever two days before, attended with vertiginous pains in the head, excessive vomiting, and other symptoms of a like kind ; when I immediately directed a large quantity of blood to be taken away, the top whereof, when cold, resembled corrupt pleuritic blood ; and I also prescribed a ptisan, and cooling jalaps and broths. In the afternoon, bleeding was repeated in the same quantity, and again, in like manner, the next morning. Calling upon him in the evening, I found him much better, nevertheless his friends mightily *opposed* farther bleeding, which yet I insisted on again, assuring them that only a single bleeding more was necessary, and he would then be out of danger, but that if they continued to oppose it, bleeding had better have been wholly omitted, and the cure undertaken by sweat, adding, in short, that otherwise he would certainly die. The event confirmed my prognostic ; for the dispute about the operation to be performed lasted so long that the *opportunity of doing it was lost*, and the patient died.

Having frequently met with such perplexing obstacles, I solicitously bent my thoughts to discover, if possible, as effectual, and at the same time a less objectionable method of curing this disease. And after frequent and long consideration of the matter, I pitched upon the following, which has since proved always serviceable, and every way complete.

First,

First, if a swelling has not yet appeared, I *bleed moderately*, according to the strength and constitution of the patient, after which a *sweat* is readily and expeditiously raised, which otherwise would not only be difficultly procured in some subjects, but there would also be danger of increasing the inflammation thereby, and thus driving out the purple spots. And the immediately succeeding sweat makes abundant amends for the considerable mischief the loss of blood, though in a small quantity, would otherwise occasion. After bleeding, which I direct to be done in bed, so soon as all things are in readiness to raise a sweat, I immediately order the patient to be covered over with clothes, and a piece of flannel to be applied to his forehead, which last expedient contributes more towards raising a sweat, than one would easily imagine. Then, if the patient does not vomit, I administer these and the like sudorifics:

Take of *Venice* treacle, half a dram ; the electuary of the egg, a scruple ; *Gascoign's* powder, twelve grains ; cochineal, eight grains ; saffron, four grains ; and the juice of kermes enough to make the whole into a bolus ; to be taken every six hours, drinking after it six spoonfuls of the following julap.

Take of the distilled water of *carduus benedictus*, and compound *scordium* water, of each three ounces ; treacle water, two ounces ; syrup of cloves, an ounce : mix them together for a julap.

I remember,

I remember, that when I was desired by an apothecary to visit his brother, who lay dangerously ill of a pestilential fever, and spoke of giving a *sudorific*, he said he had already given several strong ones without effect, the patient having thrown them up by vomit. To this I made answer, that he might prepare one of the most nauseous of those that had been exhibited, and I would easily prevent his vomiting it up. The event verified my promise ; for the patient having first sweated moderately, by the weight of the bed-cloaths only, swallowed and kept down a large bolus of *Venice treacle*, which causing him to sweat plentifully, he recovered.

But to come back to my subject : I direct the sweat to be continued for twenty-four hours, by giving draughts of sage posset drink between whiles ; strictly cautioning against wiping off the sweat, and not allowing the patient's linen to be changed, however moist or foul it be, till twenty-four hours after the sweat is gone off : and this I recommend to be observed with particular care. For if the sweat vanishes in less time, the symptoms immediately return with their former violence, and the health of the patient is left exposed to a fresh conflict, which by a longer continuance of the sweat would have been out of danger.

And, in reality, I wonder much at Diemerbroeck, and others, when I consider upon how slight a pretext they are induced to stop the sweat, namely,

namely, *to preserve the strength of the patient*. For (1) that the patient is stronger whilst the sweat flows than before, must have been observed by every one that is but slenderly acquainted with the treatment of this disease. (2) I shall not scruple to publish and defend what practice and experience have taught me, with respect to this matter. Several, who by my advice were kept in a sweat for twenty-four hours, have been so far from complaining of *greater weakness* * from thence, that they have declared, that in the same proportion the superfluous humour was thus carried off, they perceived their strength increase. And towards the latter part of the time, I have often observed with surprize, that there appeared a more natural, genuine, and copious sweat than the former occasioned by the sudorific, and which gave greater relief, as if it were truly critical, and terminated the disease. (3) Again, I do not see what inconvenience would attend refreshing the patient with restorative broths and liquids, when the sweat is at the height, and then the objection of want of strength to bear long sweats, vanishes. If, therefore, a faintness be perceived towards the end, I allow the patient to sup a little chicken-broth, the yolk of an egg, or the like, which, together with the cordials and draughts, usually directed to keep up the sweat, sufficiently sup-

* The weakness is occasioned by the disease, as this is removing the weakness vanishes.

port the strength. But in a matter of fact so evident, it is needless to use many arguments ; for what clearly shews the advantages of this method is, that whilst the patient continues to sweat, he judges himself in a fair way of recovery, and in the opinion of the attendants, seems in no farther danger ; but as soon as the sweat ceases, and the body begins to dry, all things change for the worse, a kind of relapse being thereby occasioned.

For twenty-four hours after the sweat is gone off, I advise the patient to be cautious of catching cold, to let his linen dry on his body, take all his liquids warm, and also to continue the use of the sage posset drink. Next morning I give the common purge, made of an infusion of tamarinds, the leaves of fena, rhubarb, with manna and solutive syrup of roses dissolved in the strained liquor. And by this method I recovered several persons, who were seized with a pestilential fever ; and *did not lose a single patient after I began to use it.*

Another remedy, which comes sanctioned by authority, is that of the *cold bath*. Of the ancient physicians, the most copious on the use of water, in all its forms, is Galen. He not only used cold drink, but immersion in the cold bath, in burning fevers, with extraordinary success. His relations appear to me, in general, tedious and obscure, but not destitute of truth ; and the weariness of perusing him is occasionally relieved by the pleasure

ture of rescuing a fact that was buried under masses of false theory.

Masuah, says Bruce, is very unwholesome, as, indeed, is the whole coast of the Red Sea from Suez to Babel Mandel, but more especially between the tropics. Violent fevers, called there *Nedad*, are very prevalent, and generally terminate on the third day in death. If the patient survives till the fifth day, he very often recovers by drinking water only, and throwing a quantity of cold water over him, even in his bed, where he is permitted to lie without attempting to make him dry, till another deluge adds to the first.

He describes the same fever as prevailing in Abyssinia, especially in all low marshy grounds. "It is really," he says, "a malignant tertian. It always begins with a shivering and head-ach, a heavy eye, and inclination to vomit. The face assumes a remarkable yellow appearance." This is doubtless the yellow fever of the West Indies and America. The practice of using cold water internally and externally in this fever in the lower Egypt, Nubia, and Abyssinia, has not indeed been interrupted by the influence of a false theory: but we may ascribe its continuance in part to another circumstance. The water in the springs of those uniformly sultry climates is never much colder than the air, and hence the fatal accidents from the improper use of cold drink or the cold bath, have seldom if ever occurred.

In

In page 225, the same author gives the case of a captain of a ship (a man of credit), as related by himself, who having taken some sailors on board affected by the plague at Constantinople, caught the infection. "I felt," says the captain, "an excessive heat, which made my blood boil, my head was very soon attacked, and I perceived I had but a few moments to live. I employed the little judgment I had left to make an experiment. I stripped myself quite naked and laid myself for the remainder of the night on the deck: the copious dew that fell pierced me to the very bones; in a few hours it rendered my respiration free, and my head more composed. The agitation of my blood was calmed, and after bathing myself in sea-water, I recovered."

On the 1st of August, 1777, says Dr. Wright, I embarked in a ship bound to Liverpool, and sailed the same evening from Montego Bay. The master told me he had hired several sailors on the same day we took our departure; one of whom had been at sick quarters on shore, and was now but in a convalescent state. On the 23d of August, we were in the latitude of Bermudas, and had a very heavy gale of wind for three days, when the above-mentioned man relapsed, and had a fever, with symptoms of the greatest malignity. I attended this person often, but could not prevail with him to be removed from a dark and confined situation,

situation, to a more airy and convenient part of the ship; and as he refused medicines, and even food, he died on the eighth day of his illness.

By my attention to the sick man, I caught the contagion, and began to be indisposed on the 5th of September, and the following is a narrative of my case, extracted from notes daily marked down: I had been many years in Jamaica, but, except being somewhat relaxed by the climate, and fatigue of business, I ailed nothing when I embarked. This circumstance, however, might perhaps dispose me more readily to receive the infection.

Sept. 5th, 6th, 7th, small rigours now and then, a preternatural heat of the skin, a dull pain in the forehead, the pulse small and quick, a loss of appetite, but no sickness at stomach, the tongue white and slimy, little or no thirst, the belly regular, the urine pale, and rather scanty, in the night restless, with starting and delirium.

Sept. 8th. Every symptom aggravated, with pains in the loins and lower limbs, and stiffness in the thighs and hams.

I took a gentle vomit in the second day of this illness, and next morning a decoction of tamarinds; at bed-time, an opiate, joined with antimonial wine, but this did not procure sleep, or open the pores of the skin. No inflammatory symptoms being present, a drachm of Peruvian bark was taken every hour for six hours successively, and now and then a glass of Port wine, but

but with no apparent benefit. When upon deck, my pains were greatly mitigated, and the colder the air the better. This circumstance, and the failure of every means I had tried, encouraged me to put in practice on myself what I had often wished to try on others, in fevers similar to my own.

Sept. 9th. Having given the necessary directions, about three o'clock in the afternoon, I stripped off all my clothes, and threw a sea-cloak loosely about me till I got upon the deck, when the cloak also was laid aside: three buckets full of salt water were then thrown at once on me; the shock was great, but I felt immediate relief. The head-ach and other pains instantly abated, and a fine glow and diaphoresis succeeded. Towards evening, however, the febrile symptoms threatened a return, and I had again recourse to the same method as before, with the same good effect. I now took food with an appetite, and for the first time had a sound night's rest.

Sept. 10. No fever, but a little uneasiness in the hams and thighs—used the cold bath twice.

Sept. 11th. Every symptom vanished; but to prevent a relapse, I used the cold bath twice.

Mr. Thomas Kirk, a young gentleman, passenger in the same ship, fell sick of a fever on the 9th of August. His symptoms were nearly similar to mine, and having taken some medicines without experiencing relief, he was desirous of trying the cold bath, which, with my approbation, he did

did on the 11th and 12th of September, and, by this method, was happily restored to health. He lives at this time (Jan. 1786) near Liverpool.

This practice has been followed up by Dr. Wright, and many since the publication of his case have adopted the plan, but more particularly by Dr. Currie of Liverpool, a physician of the highest respectability.

To those who oppose the doctrine of *abstraction of stimuli* in the early stage of fever, let them seriously consider the voice of nature in this disease; for a person is no sooner attacked with fever, than he feels a desire of going to bed, where, by an easy horizontal posture, he lessens the stimulus on the vascular system, which arises from the action of such a number of muscles as must be employed in an erect position of the body: but, in whatever direction he may lay himself, particular muscles, by being kept in constant action, soon become tired, and the patient seeks for a new posture to give relief to his wearied muscles; the same weariness recurs in a few minutes, and gives rise to that remarkable restlessness which takes place in fevers. I have already taken notice of the incapacity of the sick to endure any great noise, bright light, strong smell, animal food, or whatever stimulates their system, which experience teaches would aggravate this disease. All stimuli of this kind they avoid in the most solicitous manner, from a consciousness of their hav-

ing a tendency to increase their disorder; but an ardent desire of drink and dilution, which has so considerable a share in the cure of fevers, is strongly pointed out. They have likewise the strongest desire for acid fruits and subacid liquors. This is one of those natural appetites bestowed on us for answering some valuable purpose in the œconomy, which, in the present case, is not only the correction of a putrid colluvies in the primæ viæ, but an abatement of the putrescency of the blood that every day increases: for, whatever may be the nature of the fever at first, it seldom fails, in six or eight days, to shew its putrid disposition by a variety of symptoms. This is the antiphlogistic method of cure dictated in such strong and pathetic expressions by nature, in every putrid fever, and ought to be followed strictly by us, unless in cases of debility in the more advanced stage of the disease, when cordials, stimulants, and antispasmodics, are exhibited with advantage, as will be shewn in the next section.

PRACTICAL OBSERVATIONS.

SECT. LVIII.**THE SECOND STAGE OF PUTRID FEVER.**

THE effects of the poison of typhus are consonant to those of other poisons, much depending upon the constitution, and more perhaps on the degree of virulent, or the quantity affecting the frame. In some instances, as on the opening a bale of goods, the poison has killed like a stroke of lightning; and it is observed, that the body becomes immediately purple, and rapidly putrid. The appearance of this stage must, therefore, depend upon the above circumstances; but, in general, the action of this poison is seen in a lesser degree, and the putrid stage does not come on for several days.

Some practitioners wait for an intermission of the fever before they throw in the bark; but the sooner after evacuations have been employed, the bark is administered the better. This fortifies the habit, enables it the better to overcome the virus, and, as was before observed of ague, renders the blood more attractive of oxygen, which this poison
seems

seems to consume in a greater proportion than it can readily be received into the frame.

The bark should be administered at regular, and not far distant, intervals, as two scruples every three hours at first, washed down with an alkaline draught in the state of effervescence ; and if the stomach, or bowels, are much deranged, instead of the effervescent draught, porter should be taken, or wine, with twenty or thirty drops of vitriolic acid ; and as the *vis vitæ* seems to decline, the interval must be shorter ; viz. every two hours, and a scruple of serpentaria, and twenty or thirty of æther, be added each time of taking the bark.

If the fever remit, with perspiration, a good night procured by thirty or forty drops of laudanum has been found of the highest service ; but laudanum is a medicine carefully to be administered. Its effect, as a stimulant, when given in a small dose, has been before explained ; but it was there shewn, that it is of too powerful a nature to be used without the greatest caution, and that porter, wine, and æther, with serpentaria and bark, are better substitutes where stimulant powers are required. As an apology for the dose of these sometimes administered, let it be remembered, that the irritability has been exhausted ; and the frame resembles a jaded horse, which to keep up, and going, requires not only the spur but the whip.

Blisters are of service, as exciting, when the power of life are very low, and towards the twentieth day ; so are mustard cataplasms.

Madeira, at this time, even to the extent of two bottles a day, may be used, under the idea that the action of this poison is overcome after the twentieth day, and if the patient can be carried on to this period, the fever is gone, and that he resembles a shipwrecked mariner, who, after long buffeting the waves, is within the reach of shore, spent and exhausted, and has to make but a few efforts more which bring him to the wished-for haven.

On the final cessation of the fever, the conduct is critical. The constitution labours under the utmost state of indirect debility, and many, it is apprehended, lose their lives at this moment from an uncautious conduct in the practitioner. This period is marked by constant dosing, like a new-born child, and, upon waking, recourse must be had to food, as sago, the white of an egg, some calves foot boiled in milk, tapioca, and medicine must be differently administered and chamomile may be substituted for bark, and taken at more distant intervals. No exertion must be now used *, and meat be given sparingly, with wine, after which the patient will find he has

* There are records where getting the patient out of bed after recovery from fever, he has died in the attempt.

again to learn to walk, and should now return his thanks to an all powerful Creator, who has preserved his life thus far, and reflecting on past danger, he should regulate his after conduct in life, with a constant eye towards futurity, in grateful remembrance.

END OF THE FOURTH VOLUME.

